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June 1926 10 Cents

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Better Crops

The Pocket Book of Agriculture

The Whole Truth—Not Selected Truth

VOLUME VI NUMBER FOUR

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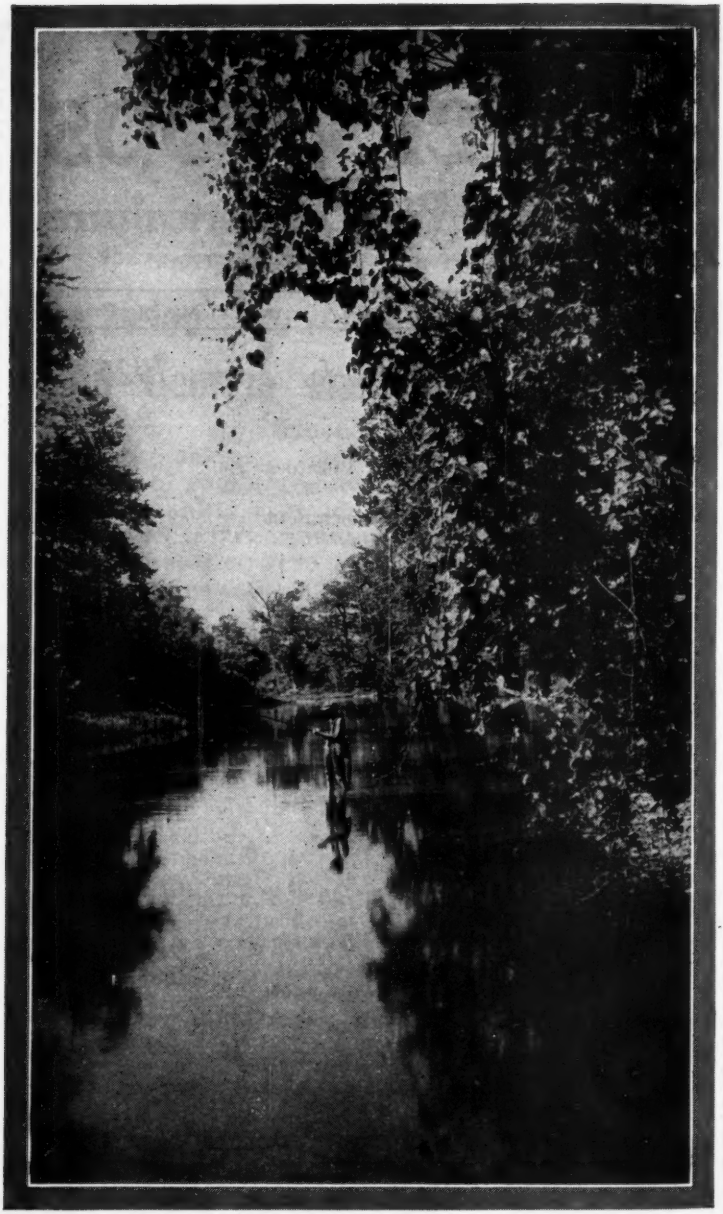
Who's Who of BETTER CROPS

EDITOR.....R. H. STINCHFIELD
CONTRIBUTING EDITOR.....JEFF MCDERMID
MANAGING EDITOR.....G. J. CALLISTER
PRESIDENT.....E. K. HOWE
VICE-PRESIDENT AND TREASURER.....H. A. FORBES

EDITORIAL *Office:* 10 *Bridge Street, New York*



But should you lure
From his dark haunt, beneath the tangled roots
Of pendent trees, the Monarch of the brook
Behooves you then to ply your finest art.

—Thomson

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VOL. VI NEW YORK, JUNE, 1926 No. 4

¶ *An essay that may make a fork in your thinking route.*

SLAVES

By Jeff McDermid

THE man who went upstairs merely to change his collar, and found himself, ten minutes later, fully arrayed in his *robe de nuit* and about to slip into bed in full daylight, was absent-minded!

But in addition to being *non compus mentus* he was the victim of a habit; for while his brain was busy on some absorbing, abstract problem please note that his fingers were busy undressing him without his knowledge—given the accustomed starting point his trained muscles completed the chain of customary action without being told.

Nature, to free man from the necessity of learning over and over again, day after day, how to do the simple little things he must do, teaches his muscles and nerves habits until they become so proficient that his conscious brain need no longer supervise their activities.

Note tomorrow morning the intricate gyrations your nimble fingers perform to tie your shoes; watch, consciously, just how your hands tie your four-in-hand or bow tie. Or better yet, describe now to yourself just how you button your coat: which hand does

this and which finger that!

Then button your coat—and get a surprise.

You will discover that although your hands have buttoned and unbuttoned thousands—yes, millions—of buttons, that you do not know how the simple feat is performed.

Nature is kind to her chosen, partially freeing him from the necessity of overseeing his body's work. She lets a man shave in peace and comfort every day, his mind on more important things, his nimble fingers going through the habitual manipulations like a troupe of bored and blase trained seals.

But, in being kind, she oversteps the mark and with chains of steel shackles man to his habits so securely that once in their grip he can seldom release himself without almost superhuman effort.

The Reverend Doctor Schaeffer was right. There are only two kinds of habits: good and bad.

"What is a medium good egg?" asked Mark Twain when someone reported that So-and-So's poetry was neither bad nor good, but just medium. Mark knew that in many lines there is no middle ground—a thing *is* or it *isn't,* so there.

A good habit is one to which one should be willing to be a slave—that frees the mind of conscious effort by reposing the necessary confidence in a set of trained muscles which, like good employees, do their work well when the boss is not looking; or that leads on to better, greater, finer, safer and broader things.

A bad habit is—well, I say, do I have to go into all that? Let's get on.

THERE is a theory which men who breed animals have, called telegony—"the suppressed influence which a previous sire has on the subsequent one from the same mother."

And there is, I believe, such a thing as mental telegony in man—errors and fool ideas dropped centuries ago into the cosmic whirl still persist. We "breed back" to these old mistakes with a sureness and a persistency that to the progressive mind is disheartening and disillusioning.

The longer folks have done a thing the more likely they are to continue.

To attempt to inject new ideas into the public consciousness smacks of the foolhardiness of the swaggering bull who planted all four feet between the tracks, lowered his head, and dared the Limited to put him off!

Men are slaves to ideas of the past, to habits of their grandfathers. The race of men seems to run on and on simply through a momentum gained in previous generations. Anything new has to struggle for bare existence; and then after it is gradually adopted, let someone *try* to take it away!

Men will fight nearly as hard to hang onto a new idea now become old as they did to ward it off when it first presented itself.

Doctors still write prescriptions in Latin. But fifty years from the day someone teaches them to substitute Esperanto they will defend Esperanto against all comers and refuse any other substitute.

With nearly the whole world using the easily calculated Metric System, Americans still adhere to the moss-covered foot and yard; the ancient pound, mile, bushel and rod—but after adoption they will viciously protect the Metric System against all vilifiers.

That we are a little more receptive to a new idea now than ever before, I think is proven by the

(*Turn to page* 62)

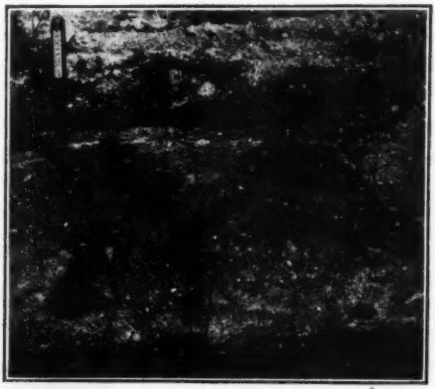
Fertilizer Injuries to Sweet Potatoes

By R. F. Poole

Assoc. Plant Pathologist, New Jersey Agr. Expt. Station

EDITOR'S NOTE: *This article is of value as showing the effects of the different forms of potash and especially that sulphate is preferable to all other forms.*

BARNYARD manure, which is recognized widely as the best fertilizer for sweet potatoes, has become both so scarce and expensive that its use has been limited for some time. Commercial fertilizers have been sought for and used extensively for growing sweet potatoes in New Jersey.



The effect of fertilizer injury on sweet potato plants in sand plots. One plant to the right was almost completely defoliated. The fusaria that cause stem rot entered the injured roots and killed the plant

There is some but not a perfect agreement as to what is the best source of the necessary elements and what amounts should be used in a mixture as well as the quality of the mixture necessary to give the greatest returns in growing this crop. The use of nitrogen in mixtures varies from none to three per cent, the phosphoric acid from eight to ten per cent, and the potash from five to twelve per cent. The applications of the mixtures vary from 750 to 1500 pounds per acre.

It is sometimes a practice to use an additional application of 300 to 500 pounds of muriate or sulfate of potash and this results in severe damage unless applied in the fall or early spring. Kainit is sometimes used and applied broadcast at the rates of 500 to 2000 pounds per acre and this causes heavy damage unless applied in the fall and winter. It is sometimes doubtful if such large applications of potash are really necessary, but excellent results are more frequently obtained than are failures due to its use. In Europe it is the common practice to apply all fertilizers except soluble nitrogen well ahead of planting time—thus maximum amounts are safely used.

The use of commercial fertilizers, whether mixed at home or pur-

chased already for use, have resulted in heavy losses on light sandy and other soils where the proper use of the mixtures were not familiar. The substances used for applying the nitrogen and phosphoric acid have not been injurious to the sweet potato, but the serious damage has been due to the toxicity of the substances from which the potash was derived.

The injury, which was most conspicuous and most severe in dry seasons, was first observed as a yellowing of the leaves and stems and finally the blackening and killing of all parts of the sprout. This took place from two to four weeks after the plants were set in the field. In some fields the loss of plants was more than 50 per cent of the planting. Affected plants which were not killed were at first stunted, but grew well later on in the season and sometimes produced a fair yield. The leaves on injured plants were very mosaic in appearance, and the tissue between the veins was frequently browned and spotted. Since parasitic fungi enter injured tissue much more readily than healthy tissue, the losses due to wilt or stem rot were increased on the infected soils when the plants were injured with fertilizer.

The use of potash is very necessary for growing the sweet potato and large amounts per acre are more apt to produce the desired quantity and qualities such as shape and color than are small amounts. The sulfate of potash is preferable to all other forms, since it can be used extensively without injuring the plants.

While muriate rarely causes injury, it sometimes does on the very light sands, especially when applied a few weeks previous to setting the plants. Where 300 to 500 pounds per acre is broadcast just before and after the land is first plowed in the spring no injury is apt to occur; however, the fall would be the proper time to make the heavy applications.

Kainit, the form lowest in potash, and most toxic to young plants, can be applied in the fall and winter at rates of 500 to 2,000 pounds per acre without any danger of injuring the plants.

The very best results and the least amount of injury would be obtained by applying separately part of the potash in the fall or early spring and from 500 to 750

(*Turn to page* 47)

Left of center—Three rows showing plants injured by a fertilizer containing kainit as the source of potash

Right of center—Rows that received the same amount of fertilizer but with muriate and sulfate of potash as the source of potash

¶ Some interesting tax figures presented by a man who is in a position to draw conclusions.

Paying for Unnecessary Government

By A. M. Loomis

Washington Office of the National Grange

FARMERS have many local problems. They are not all alike, nor all harmonious, even in the same neighborhood. They are less alike, and less harmonious in more widely scattered localities. The Illinois corn and wheat grower who sells these products and buys cotton cloth and cottonseed meal, has a very different view on some important matters than does the Alabama or Georgia farmer who grows cotton, and buys flour and perhaps also buys either corn, or some of the meat animals to which it is fed.

BUT it is being increasingly emphasized by Dr. T. C. Atkeson, Washington Representative of the National Grange, and by leaders in Grange activities both national and local that there are some problems in which there is a common interest among all the farmers of every section. It has been discussed at length in BETTER CROPS that there is a common interest in a better distribution of the costs of operating railroads between freight rates on farm products and on manufactured products. Farm products, it was shown by this study of Dr. Atkeson, and his brief before the Interstate Commerce Commission, are carrying an undue part of this load.

NOW Dr. Atkeson has come out with an equally important study showing how the increasing burden of taxation is veering down with fearful force on those dwelling on the farms and in the farming villages, of the country. This, he shows, is a common problem in which farmers from Maine to Florida to Seattle to San Diego have an absolutely common interest.

"The problem of the average farmer," says Dr. Atkeson, "is principally within his own line fences. In this sphere he labors to produce the crops and the live stock and their products, which enable him and his family to exist, to have the necessities, and in

addition such pleasures, enjoyments, refinements, education, communication, and social, moral and religious refinements, as his abilities and his inclinations will permit.

"The American farmers today require far less of government than is being forced upon them. They are being made to pay for what they do not require. The average American farmers think, talk, or ask very little in the way of what the state or the nation can do for them. Peace, safety, daily mail, a good school and a passable road are about all they ask. Beyond these but based on them, the American farmer feels perfect confidence in his own ability to provide. He does ask, however, that this ability to provide should not be handicapped either by artificial benefits to other classes, or by unloading an excessive cost of government on his shoulders."

Upon this simple and sensible picture of farm life as it is for the majority of the twenty-five or thirty million men, women and children now living on and working the farms of the country, Dr. Atkeson, by the study of state and local taxation now completed, pours the flood of light as to the handicap which excessive taxation shackles to the farmer's ability to provide for his own.

"While federal taxes are being reduced the cost of state and local taxes are still going up," he says. Comparison between Census Bureau figures for 1922 and Grange tabulations for 1924 shows that as to state taxes alone there was an increase of more than $21,000,000 in the two years. This is also incomplete, as the Grange when this was published lacked figures from several states, and lacked many items from most all of the states. "I believe the increase in two years is closer to $40,000,000 than to $20,000,00," says Dr. Atkeson.

"The total federal government taxes for 1924 were $2,688,000,000. The total state and local taxes so far as tabulated, with several whole states missing, and dozens of items incomplete because of the faulty state systems which do not record local taxes at all in state tabulations, amounted to over $4,000,000,000, or more than 50 per cent more than the federal taxes.

"County taxes alone, where almost every dollar is a direct tax on farmers and farm property amount to as much as the state taxes. The county taxes are more than the state taxes in most of the states, all but those in which there are a number of very large cities like Illinois and New York.

"School taxes, raised also by direct taxes on real and personal property account for another item far in excess of the cost of state government, and an item which bears very hard on the farmer. Only nine states report school taxes less than the state direct tax. In three of these this is due to a system of state aid for schools. In some of the states the school taxes are three and even four times as much as the state taxes."

THE study of the records, state by state, as they can now be found in the Washington office of the Grange, shows a remarkable situation as to the various methods of levying the cost of this enormous governmental activity. In all of the states except a very few the bulk of the state taxes are direct levies on real and personal property. It would be interesting, if space permitted to detail the few exceptions and explain the special systems, like North Carolina, where no direct state taxes

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Showing the method and the mark which is made

Tattooed Hogs

By L. S. Richardson

United States Department of Agriculture

THE circus "tattoo man" no longer has a monopoly on the age-old decorative art of tattooing. The American farmer is going to make use of the practice in marking his hogs so that they may be easily identified even after they have been hung on the hooks at the packing plant.

In the systematic handling and cooperative marketing of hogs many occasions arise when it is desirable to trace the origin of certain animals after slaughter. Some means of identification which is infallible has long been needed. There is nothing so lasting as the "tattoo" mark. Properly applied, a tattoo mark will resist all attempts to remove it and, after death, is as permanent as the skin itself.

The practice will have its most important use, perhaps, in connection with diseased animals condemned at the slaughtering places. In a cooperative shipment of hogs, those found diseased can readily be charged against the right owner. More than that, the tracing of the source of the infection to the farm may be a means of eradicating the source of further infection.

One example has been recorded where the tattooing of hogs led to the discovery of tuberculosis in a poultry flock on a farm supposedly free from the disease. The cattle on the farm had been tested and

(*Turn to page 55*)

Her Majesty

By G. E. Langdon

Wisconsin College of Agriculture

"King Timothy is dead!
Long live Queen Alfalfa!"

WITH this heartening cheer the young Queen Alfalfa is being crowned in many sections of Wisconsin, and the old monarch is given farewell honors.

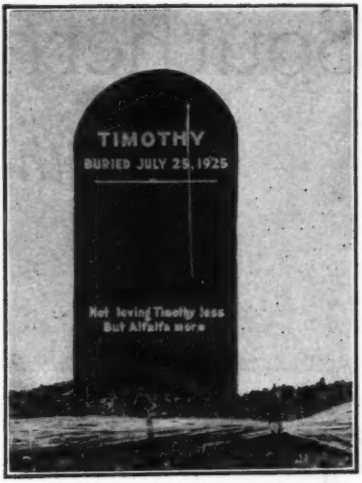
The two pageants, "The Coronation of Queen Alfalfa" and "The Passing of Timothy" are proving very popular with Badger farmers. They have a simple dramatic value and are easy to stage and direct so that county agents and extension workers have found them very useful in teaching the value of the "Queen of Forage Crops."

The first alfalfa pageant was given on the shores of a beautiful lake in Burnett county, Wisconsin. It was planned by County Agent Edward Thompson, assisted by George Briggs and L. F. Graber, both of the Wisconsin College of Agriculture. The pageant has since been dramatized and enlarged by Mr. Graber; and the new version staged in many towns and

The coronation throne was simple and easy to make

ALFALFA

¶ *A happy funeral is an unusual event. You will enjoy this one*



Timothy's wooden monument

villages in the state, as well as before more than 700 people in attendance at the Farmers' Course at Madison.

The pageants may be given either in a hall or out-of-doors on a temporary platform. Either 19 or 20 girls ranging in age from 8 to 16 years are needed. They should be dressed in white with some green trimmings or a green sash. The queen wears a gilded crown bearing the inscription "Queen Alfalfa" which may be decorated with alfalfa blossoms if they are available.

The Queen's attendants are: Lime, Fertility, Firm Soil, Hardy Seed, Two Cuttings, Marl, Inoculation, Mill Lime Waste, Early Removed Nurse Crop, Phosphate, and Ground Limestone. These girls should carry a banner or standard plainly labeled on two sides and held so that they can be seen by

(*Turn to page* 56)

The attendants who conduct the ceremony

Southern Ways *with* Peaches

By R. B. Fairbanks

¶ *Um'm—Georgia peaches!*
Read how they are grown

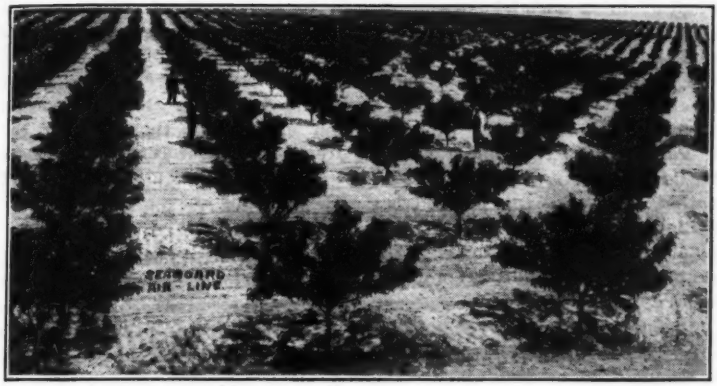
THE peach crop of the South has reached major proportions. Georgia ships more peaches to be used while fresh, than any other state in the Union. California produces more peaches than any other state, but these are largely used for canning purposes. North Carolina, Arkansas, East Texas, and Tennessee also produce peaches in comparatively large quantities.

Growers in the South long ago learned that to secure good prices, a quality produce must be offered. They have also learned that to produce a quality product, very thorough cultivation and fertilization are necessary. Pruning and spraying are equally important, but these without very thorough and efficient cultivation and fertilization will avail little.

Like the cultivating and fertilizing of any other crop, there are various methods of cultivation and kinds of fertilizer used by different growers of peaches. What we shall say in this article, therefore, should not be understood as "cut and dried" rules that are considered best by all growers. However, the methods which we shall describe are practiced by many of the most successful peach growers and are generally considered as the best for average conditions.

In commercial practice, it is generally the rule to plant some cultivated crop between the peach trees the first two or three years after they are planted. Certainly where the peaches are planted on medium poor ground, the time between planting and when the trees commence bearing, should be utilized for growing cover crops to be turned under and thus improve the fertility of the soil. However, if planted on reasonably fertile land these intercrops may be grown for two or three years without material harm to the peach trees, provided these intercrops are not planted too close to the trees and provided further that ample fertilizer is applied for both.

The trouble is, that many folks seem to think that when growing both trees and field crops on the same ground that the ordinary



A well tilled peach orchard in North Carolina

amount of fertilizer is enough for both, which, of course, is not the case. Ample quantities of both must be applied, as this method must be practiced if most desirable results are to be obtained.

Usually the peach trees are about 20 feet apart each way. When growing these intercrops in the peach orchard, a row space at least six and preferably eight feet wide should be left for the trees with none of the intercrop planted on this space. In other words, only 12 to 14 feet of the 20 feet of space should be devoted to these intercrops. When these intercrops are grown this space left for the tree. row should be cultivated as carefully as the intercrops.

ONLY low growing crops and those that mature in a comparatively short time and do not consume abnormally large amounts of water, should be grown. The low growing truck crops such as beans, peppers, tomatoes, potatoes, etc., are suitable. Cotton is also all right. Any of these crops if grown in between the trees should mature early enough so that a fall cover crop may be put in.

Where the ground is reasonably poor when the trees are set, no attempt whatever should be made to grow these intercrops, but the entire time made use of to increase the fertility of the soil by the cover crop route. In this case, the customary method is to cultivate from early spring until about June 1, at which time a crop of cow peas, bunch velvet beans, or soybeans are planted between the tree rows. These may be either sown broadcast or planted in rows, and are turned under in early fall in ample time for a winter cover crop to be put in.

The winter cover crop should consist of a mixture of some of the small grains and some of the winter legumes. For medium poor soil a mixture of hairy vetch and rye is best, because the rye will make a much better growth on poor land than will oats or wheat. Usually three pecks to a bushel of rye and 15 to 20 pounds of the hairy vetch seed are sown per acre. On soil that is reasonably fertile a mixture of a bushel and a half to two bushels of oats and 15 to 20 pounds of the hairy vetch is good. When this cover crop is sown on the ground for the first time, inoculation of hairy vetch seed is necessary.

Some orchardists plant only the

small grain as a winter cover crop. This is better than nothing, but very much inferior to the grain and hairy vetch mixture. These cover crops are turned under early in the spring. It is especially important to turn under before the small grain matures, because nothing is worse for peach trees than to have the moisture and plant food sapped out of the ground by a maturing crop of small grain.

Usually these winter cover crops are turned under just about blooming time or soon after. The ground is plowed shallow, because the peach is a shallow rooted tree and deep plowing is of course, injurious. The customary method is to turn under shallow with a turning plow, then scatter the fertilizer broadcast and follow with a disc harrow, which serves to chop the cover crop to pieces and more thoroughly incorporate it with the soil, as well as to mix the fertilizer with the soil.

There are different methods of applying the fertilizer. Some run a furrow on either side of the trees and put the fertilizer in this furrow and then cover it. The most generally practiced method, however, and one that seems best, is to scatter the fertilizer broadcast under the trees and out beyond the spread of the branches, usually twice as far as the spread of the branches. No fertilizer is put up close to the trunk of the tree. Usually it is not put closer than two and a half or three feet of the trunk of the tree.

VARIOUS fertilizer analyses are used. One grower likes one kind and another another kind. It is generally agreed, however, that a fertilizer analyzing approximately 8 to 10 per cent phosphoric acid, 4 to 6 per cent nitrogen, and 4 to 6 per cent potash is right for peach trees growing on sandy soil. About the same analysis has proved all right on clay soil. Some, however, on clay soil, find that an 8-4-4 is about the right analysis.

A goodly amount of nitrogen is needed in order to produce the proper amount of wood growth. The phosphoric acid, of course, is essential for the development of the fruit crop. The potash is needed to properly harden the wood and give the proper color, firmness and keeping qualities to the fruit and to increase the size

(*Turn to page* 60)

A good cover crop of cow peas between the trees

¶ *No. 3 of Professor White's series*

Kentucky Blue Grass

By I. W. White

Soil Research Chemist, Pennsylvania State College

AT the time of my visit at the Kentucky Experiment Station I had an opportunity to study the various field experiments on the College Farm and was impressed with the remarkable growth of several crops. As a recent student of the late Cyril G. Hopkins, "I applied mine heart to know, and to search, and to seek out wisdom, and the reason of things."

THE picture of the Elmendorf herd grazing on the blue grass plain was still before me, and the cause of this wonderful natural growth of this matchless grass was uppermost in my mind. I asked my host the reason for these abundant crops and what fertilizer seemed to give the best result. His unexpected reply fully answered my question, for he answered, "We got no response from fertilizer treatment on the College Farm". Having lived in the East where the spoliation system of farming had so long been the practice his reply was even more surprising.

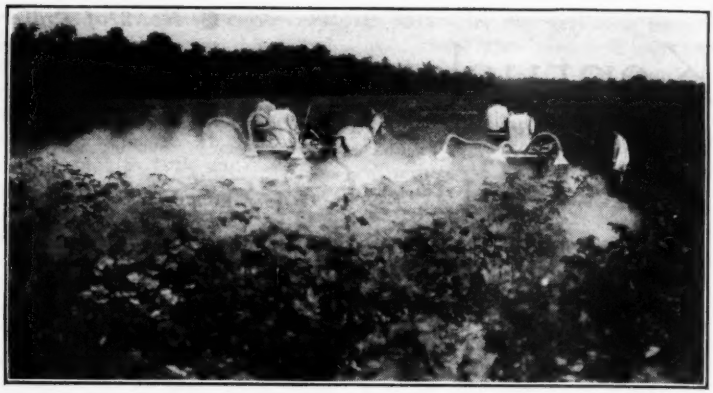
The failure of fertilizers to produce a crop response on this local soil suggested that the natural growth of blue grass was due to the unusual soil and not to more favorable climatic conditions.

A study of the composition of this Kentucky soil, with special reference to the phosphorus content should therefore furnish fairly conclusive evidence. Reference to the publications of the Kentucky Station showed that this blue grass soil to a depth of seven inches actually contains 625 times as much so-called available phosphorus as found on Dekalb soil at Snow Shoe. The following summary shows the phosphorus content of the Kentucky soil in comparison with the three Pennsylvania soils included in this story.

Reference to the above summary shows that the blue grass soil, formed from the weathering of phosphatic limestone, contains a supply of phosphorus almost unbelievable. Even more surprising is the fact that the blue grass soil at a depth of from 40 to 80 inches contains five per cent phosphorus equivalent to 100,000 pounds per acre, or equal to one-fourth its weight of tricalcium phosphate.

Beyond question the secret of the natural growth of blue grass in Kentucky is the phosphorus content of this abnormal soil. Here

(*Turn to page 57*)



Cotton growing can be a losing game, even when cotton prices are high, if it is attempted without up-to-date weevil control measures

That Price Disparity

By Arthur P. Chew

United States Department of Agriculture

IT is a common weakness to dream of a Golden Age either in the past or in the future. Where you look for it may depend on whether you are an optimist or a pessimist, or perhaps on whether you are young or old. Pessimists and elderly persons usually have their Golden Age in the past. For them there are no days like the old days. The present is drab by comparison, and the future hopeless. Optimists and the young yearn toward a Golden Age in the future. Indeed, they often fail to make the most of the present by thinking about what the future may have in store.

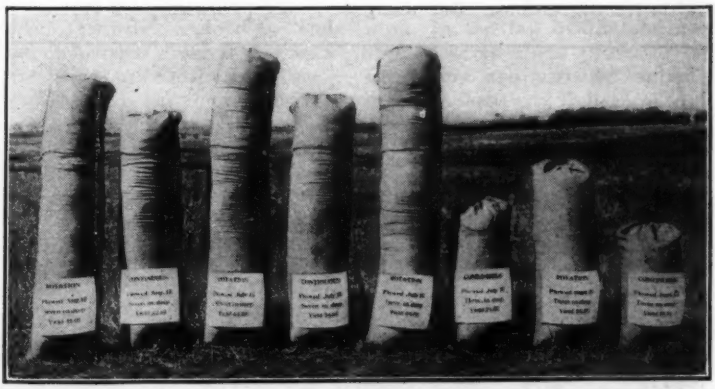
JUST now, agriculture is in a pessimistic mood and consequently has its Golden Age in the past—to be exact, in that five-year period from 1910 to 1914. That stretch of years is supposed to have been pretty nearly ideal for the farmer. He measures things to-day by the way they compare with what existed then. Government agencies back him up in this habit by using a pre-war measuring rod for reckoning price movements and farm commodity purchasing power. It is widely held that we can tell just how sick agriculture is by comparing the buying-power of grain and livestock to-day with their buying power from 1910 to 1914. There is a belief that every step

in the convalescence of the patient will be marked by an approach to the pre-war relative price situation.

That explains the interest of farmers in price index numbers. Statistics are usually dry, but not the statistics that show what kind of a deal the farmer is getting compared with that of other producers. All sorts of personal, economic, social, and political values center about statistics of that kind. They are the basis of the agitation for farm relief legislation. They prove to the farmer, and also to other people, that he has something to holler about. They get him a hearing in quarters that otherwise might be cold to his plea for help in struggling out of the slough of depression. The Department of Agriculture's index number showing the purchasing power of farm products today as compared with what it was before the war is the focal point of all this eager interest and profound concern. It is blazoned on every banner of agricultural revolt, and dominates every proposal for farm relief.

Well, it is proposed to do away with the present method of calculating farm commodity purchasing power by comparisons with a pre-war base period, and to adopt a post-war base period instead. You can imagine what sort of a rumpus that will kick up. A post-war base period for reckoning price movements of course would make the present position of agriculture look favorable rather than unfavorable as compared with the position of industry, because agricultural prices have risen more than industrial prices in the last few years. Instead of an index number indicating an agricultural position below par, we should have one showing it to be above par. That would be the result of exchanging a pre-war par, when farm commodity purchasing power was high, for a post-war par when it was very low.

Although the change is not yet decided on, it is probable that a large number of price-index numbers, including those of the Government, will be calculated on a post-war basis before long. Don't blame the Department of Agri-



A comparison of rotation with continuous cropping for winter wheat. Efficient methods can so vastly increase the margin between costs and prices that farmers see their best chance for profits in controlling costs, not prices

culture for the change, if it is made. The initiative comes from business, which sees no point in hanging on to a 1910-1914 yardstick in view of the tremendous and perhaps permanent price-changes that have taken place since then. Business wants the Bureau of Labor Statistics to reckon wholesale and retail price movements on a post-war basis, and wants the Department of Commerce to report imports and exports in the same way. In calculating the purchasing power of farm commodities, the Department of Agriculture has to use industrial prices furnished to it by the other departments. If these other departments put their index numbers on a post-war basis, the department will be forced to do likewise, since it does not itself collect all the figures necessary for working out the problem.

How will this affect the farmer? Our answer will depend on what you think price comparisons are for. A pre-war base period indicating that the present state of agriculture is not good is useful in drawing attention to a national problem, and perhaps in winning legislative concessions. But many farmers think they wouldn't be able to make out a case for themselves without a pre-war basis for gauging their present position. They want pre-war price ratios constantly held up as a mark to aim at, in the belief that no price relationship less favorable to agriculture can possibly enable the farmer to prosper. This is a serious mistake. There is no proof that the pre-war position is either "normal" or necessary to farm prosperity. It is utterly wrong to waste time and money and energy in vain efforts to restore it by artificial means, in the belief that agriculture will go to the dogs unless it is restored.

Even as a means for making out a case for farm relief, the farmer is not wholly dependent on pre-war price comparisons. There are other, and perhaps better, ways of demonstrating that farm commodity prices are too low. Take for example the testimony of income statistics. Not since 1919 has the return from agriculture allowed both a commercial interest rate on its capital investment and reasonable pay for the farmer's labor, risk, and management. The crop

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Improved Mammoth seed wheat on a Maryland farm whose owner worries less about price disparities than most farmers because he knows how to keep his costs of production down

Honored by Workers

By Ted Butlar

Dr. Andrew M. Soule

A brief sketch of a busy man

SOUTHERN Agricultural Workers met recently in Atlanta, Georgia, and elected a new head for their organization. In selecting the director of its policies, this association—made up of agricultural college and experiment station workers, agriculturists representing railroads, fertilizer companies, and other industries closely allied with agriculture—has chosen a man well and widely known throughout the South, Dr. Andrew M. Soule, president of the Georgia State College of Agriculture and the Mechanic Arts.

Oddly enough, Dr. Soule who has become such an ardent student and worker in all things pertaining to the betterment of agriculture in the South, was born near Hamilton, Ontario, Canada. All of his early school training was obtained in northern schools. He was prepared for college in the primary and secondary schools at Niagara Falls, Canada, received an associate diploma from the Ontario Agricultural College in 1892, and graduated from the University of Toronto in 1893 with the degree of B. S. A.

In 1894 he accepted a position with the Missouri Experiment Station as assistant director and in charge of the live stock and dairy work. In the fall of 1894 he was appointed assistant professor of agriculture and assistant agriculturist of the Texas College of Agriculture and the Texas Experiment Station. He served in this capacity until the fall of 1899 when he was called to the University of Tennessee as professor of agriculture and director of the Tennessee Experiment Station. In 1904 he was elected Dean of the College of Agriculture and Director of the Experiment Station at the Virginia Polytechnic Institute. In 1907 Dr. Soule became President of the Georgia State College of Agriculture and the Mechanic Arts, which position he still holds.

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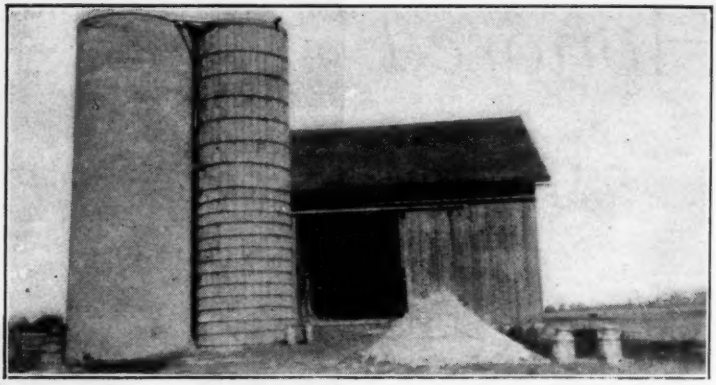

Silos and lime are a part of this farmer's creed

WINNING on

By H. E. McCartney

Fairmount, Indiana

THIRTY-THREE years ago Charles Zigler, a carpenter, Swanton, Ohio, bought a farm in the northern part of Ohio. The land was poor. It never had been in a high state of fertility. It had not been half farmed and the meager crops which had been grown had been sold off and nothing returned to the soil.

After the new owner had made a cash payment of about one-half of the purchase price he did not have much money left with which to provide working equipment and capital to support his farming operations. A cheap team, a second-hand wagon, a few of the simplest of farming implements, one cow and a few chickens made up about all he could boast of with which to start.

Men at the corner grocery laughed and said that Zigler was a fool to quit the carpenter trade and try to make a living on that old worn out 38 acres.

NO sooner had he gotten possession of the place than he began to practice the first of the ten principles that have won final success for him. Expressed in his own crisp words this was, "You must feed the soil if it is going to feed you." He began to haul manure from town and to spread it carefully over his fields. He contracted for all the manure from one of the two livery barns in a nearby village. Later he was able to get the entire output from the second one.

Mr. Zigler keeps a herd of well bred Holsteins

PRINCIPLES

¶ *Here are* 10 *which made a carpenter a successful farmer*

Whenever possible he bought from people about town who kept a horse or a cow. In relating his early experiences he said, "Many a time during those first years I went to town with only 25 cents in my pocket and spent that for a load of manure."

The first crop he put in was 5 acres of fall wheat. This was made possible because he had gotten possession of the field as soon as the crop was removed after he had completed the purchase in the summer. One object in sowing wheat was to get straw. This he furnished to men who had livestock in town. In turn he got the manure, thus carrying back to the farm more fertility than the sale of a small crop of wheat had removed. With regard to this he said, "I was too poor to afford livestock, so had to resort to every means possible to secure manure."

BEFORE he had actually grown a crop or even before he had put in any crop except the wheat, he was practicing the second of his principles of success. This is as he put it, "Get the surplus water off." Part of the farm was wet and needed drainage.

His difficulty was to secure tile. The problem of labor did not worry him for he could do the work himself. Finally he bargained for enough to run one line from the wettest spot on the place to a point where he could secure a satisfactory outlet. It was necessary that he dig to a depth of seven and

one-half feet through a knoll in order to place this first line down to a sufficient depth.

In due time he completed the job of laying this first line and from time to time added laterals until the farm was quite thoroughly drained. In laying the tile he says that his experience as a carpenter was very helpful to him in getting the necessary levels and in laying out a permanent plan of drainage that he might install as opportunity might afford. Likewise that same previous experience has been useful in laying out fields in a systematic manner and in planning and doing the thousand and one operations incident to running the farm.

"KEEP livestock," is Zigler's third principle. After his start with one cow he purchased others as rapidly as he had the cash or credit. The purchases he was able to make and the keeping of the female off-spring soon built up a herd that could take care of all the feed produced on the farm. Keeping livestock means more with him than merely using the feeds to produce fertility to return to the fields. Good livestock, he says, will make a profit above the market value of the feed. Being located in a section which is very favorable to dairying, he has naturally turned to that line and has kept a herd of milk cows continuously since he was first able to purchase cattle to place with the one cow he had when he started farming. Today he has a nice herd of Holsteins. The cream checks are sufficiently large to indicate that the keeping of livestock is profitable for him.

"ROTATION" is his next principle. The succession of crops which he follows is corn, oats, wheat and clover. Sometimes this is varied by avoiding the use of oats which plan calls for corn followed by corn using the second crop of corn for silage. Wheat is sown on the ground from which the silage had been cut. The final year of the rotation is clover following the wheat.

"YOU must replace the fertility in the soil if you are to produce good crops," says this philosopher of good farm practice. Accordingly he has used commercial fertilizer in rather liberal quantities. He has adopted a plan of using 500 pounds of mixed acid phosphate and potash on his wheat. For nitrogen he depends upon the clover crop and upon humus in the manure which he returns to the fields.

It is his desire to constantly improve the crop yields on his farm and the use of fertilizer is one of the things upon which he depends for this purpose. He has used lime, also.

At the time I visited him the farm help was completing the job of digging 6 acres of potatoes. This crop was part of a 12-acre field upon which a car of 46 tons of lime had been used the preceding year and upon which commercial fertilizer and manure had been applied during the rotation. The yield of potatoes was slightly under 300 bushels when a few miles away a yield of 200 bushels was boasted of as high compared with an ordinary run of 100 bushels per acre.

He makes use of green manure crops, also. Whenever he has any ground that would be left bare through the winter, he seeds it to rye. This he plows under the next spring. "It all helps," he says.

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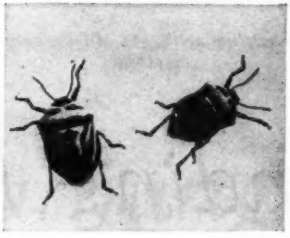
Friendly Destroyers

By Don B. Whelan

Entomologist, University of Nebraska

MANY farmers in the north central states have good cause to rejoice in the fact that there is present in many localities, an active enemy of the Colorado potato beetle or "potato-bug." It is a sucking insect belonging to the stinkbugs or pentatomids, which, for the most part, are beneficial. This insect is known by one of its two common names, "The Potato Beetle Destroyer" or "The Friendly Perillus."



For over half a decade this insect has become more and more numerous until now it is quite widely distributed. In Michigan it has been present for many years and some farmers state that it has almost completely kept the potato beetles under control, but in most cases the destroyers are not yet numerous enough to make the spraying of potatoes unnecessary.

These destroyers have been seen repeatedly on the potato plant, attacking the larva of the potato beetle, piercing their bodies with their spear-like mouth and sucking out the body juices. The adult bettles are also attacked as well as the larvae. With its long legs the destroyer is quite spry in its actions, easily overtaking the escaping potato beetles.

The potato beetle destroyer can be found during the warm periods of the late fall, early winter or early spring, in houses, sheds or other convenient shelters where they are hibernating. If found in the house they should not be killed as they are doing no harm but are spending the winter months there until spring when they return to the fields in search of their favorite prey.

ONE should not cease spraying for the potato beetles just because these beneficial insects are present. Inasmuch as the destroyers suck their food, the arsenical sprays that are used against the beetles have little direct effect upon them. However, in these days of intensive warfare on the part of the farmer against insects which attack his crops and consequent difficulty to realize that there are still some bugs ready to enlist on the side of man, steps should be taken to recognize these friends and protect them wherever possible. Educators are working toward that end.

Planting strawberry slips with the old-fashioned, back-breaking method

Unbending Backs

By
V. T. Bartle

University of Wisconsin

A MACHINE, which at first a doubting public ridiculed and rejected, has made possible the development, upon an economic and extensive scale, of commercial cabbage and tobacco growing. This implement—the tobacco or cabbage planter—has been used successfully in unbending the back of "The Man with the Dibber."

As long as man was required to bend his weary back to the tedious tasks of planting by hand strawberry, cabbage, and tobacco plants, truck gardening was destined to remain an unpopular occupation; but, with the invention of the planter and other types of time and strength-saving garden and truck field equipment, the possibilities of extending the industry began to materialize.

That "times have changed" is perhaps the most common observation of the pioneer truck or tobacco growers. They remember well the anxious periods of waiting for rain when the strawberry, cabbage, or tobacco plants had reached the proper stage for planting. And at last, when the much desired rains had fallen, they were among the crews of six to eight men who plodded forth into the freshly cultivated fields, each carrying a basket laden with young plants. The setting of each plant

The stick planters straightened the backs but still made a lot of hard work

in Farming

¶ *More than 2,000,000 fertile acres in the U. S. are devoted to the growing of truck crops. Science has helped to unbend the backs that plant them. This is the second of this series*

meant stooping over, and the task was such that each worker invariably returned home at twlilight with a tired, aching back.

Then following the invention of a spade type of planter which eliminated much of the bending but which still demanded the services of a large crew of men. The strawberry slips were carried in a box attached to the belt of the planter; and both hands of the worker were thus freed to operate the tong and shovel planting device. But even this improved method had its drawbacks, and the truck grower began to seek better ways to set his plants. It was then that he conceived the idea of adapting the tobacco transplanter for this use.

Forty years ago, Frank Bemis, a Wisconsin farmer, journeyed to Madison to demonstrate his original, crudely constructed planter. Little did he realize that he had invented a machine which would later unbend the back of thousands of truck growers from Canada to the sweet potato growing sections of the South and from California to New Jersey. Nor did he ever fully appreciate that he had designed a machine which would have a lasting effect even in foreign countries.

The work of Bemis did more than help straighten the back of "The Man with the Hoe" — it practically revolutionized the tobacco industry. It proved that three men could do the work that formerly required the services of six or eight. With the cost of labor for a given amount of production reduced, the truck grower was thus encouraged to enlarge his business from "truck garden" to "truck fields" and this is just what he did and has been doing ever since.

Not only is the modern truck grower able to produce with more economy of time, labor, and strength, but in many instances the quality of his product is decidedly improved. According to the old methods of hand transplanting the tender roots of the young plants were frequently doubled as the planter hurriedly thrust them down into the soil. Today, the planting machines are so adjusted that the dirt sifts in around the roots and consequently, the latter remain spread out as nature intended. Naturally, the roots are able to adapt themselves to new conditions in a shorter period of time, and growing processes are quickened.

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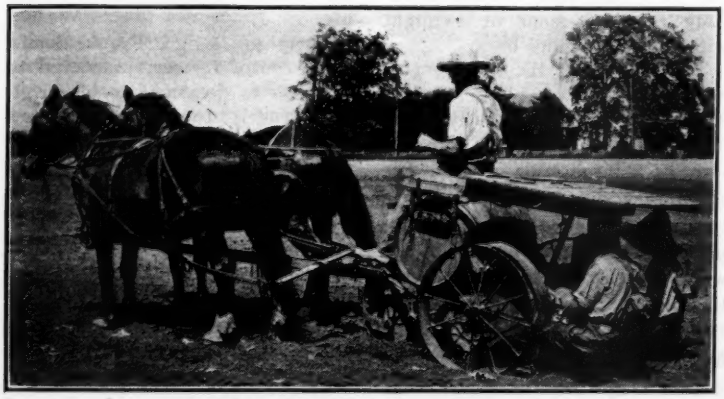
Considered Cabbage Planter a Joke

As a boy, Frank B. Swingle, now associate editor of the Wisconsin Agriculturist, saw at a middle-western county fair one of the first plant setting machines. It was exhibited by Daniel Clow, a Wisconsin inventor who had previously perfected the old Clow reaper.

Having helped set, by hand, many crops of tobacco, Swingle was much interested in the machine for which the inventor claimed so much. In common with other boys in the tobacco sections of the country, Swingle was able to recall vividly "planter's backache" which never failed to return each tobacco planting season. Planting by hand was both slow and tedious.

None of those who viewed Clow's exhibit had ever seen more than a small patch of cabbage and so could not appreciate the need of a planting machine to say nothing of the mechanical possibility. It may be, then, that the 30 and 40-acre cabbage fields now common in Wisconsin, have been largely the results of the invention of the mechanical planter. Of course, no one in that group at the old county fair had any notion of the future of the cabbage growing industry. What was then a joke has become a great boon to planters of large acreages.



Plant setting machines save labor and do a better job

Blue grass seed must be stripped quickly when ripe

The "Kentucky" *of* Missouri

By C. A. *Helm*

Associate Professor of Field Crops, University of Missouri

PREPARATIONS for the blue grass seed harvest of northwest Missouri are now under way. The center of this activity is to be found in Gentry county, where the returns from blue grass seed ranks as one of the primary assets of the county.

Blue grass seed stripping is not limited to Gentry county alone, however, but is an asset in some 20 counties in northwest Missouri.

The weather man is the most prominent figure during May and June. The weather conditions are the primary factor in determining whether it is to be a successful year or not. Plenty of sunshine is all that is needed. The harvesters will do the rest.

The industry ranges from the hand stripping by individuals to the operating of from 25 to 50 machines by contract companies and seed merchants. There are several types of strippers used in harvesting blue grass. In many cases, individuals buy the castings from local foundries and make their own machine which consists of a large drum with spike nails which revolves at high speed. The seed and chaff is thrown under and behind the drum. A tilting lever is used to raise or lower the drum to adjust to the height of the grass. At frequent intervals the strippings are removed and placed in large burlap bags ready to be taken to the curing beds.

As soon as the strippings are obtained from the fields, they are

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Virginia

Cradle of American Agriculture

By T. K. Wolfe

Agronomist, Virginia Agricultural Experiment Station

EDITOR'S NOTE: *No. 2 in our series of visits to agricultural experiment stations takes us to the "Old Dominion" state. These pictures and story present a few things to remember about the commonwealth where some of our first farming was done.*

THE Virginia Agricultural Experiment Station, which was organized in 1888, is located at Blacksburg, Montgomery county, Virginia, on soil of the Hagerstown series at an elevation of 2,100 feet above sea level. It has a historical setting in that it is situated on the first stream found flowing westward by white men in America and in its boundaries occurred the famous Draper's Meadow Indian Massacre of July 8, 1755.

The growth of the Station has been steady, gradual and healthy. However, in 1907, under the direction of Dr. Fletcher, the Station was thoroughly reorganized and the research work of all departments was placed on a good foundation for sound and influential development. Previous to 1907 much creditable work was brought to completion but since 1907 the progress has been comparatively rapid and marked.

The Virginia Station has had seven directors during its existence. Their names and terms of service are as follows: Professor W. B. Preston (1888-1890), Professor W. D. Saunders (1890-1891), Dr. J. M McBryde (1891-1904), Dr A. M. Soule (1904-1907), Dr. S. W Fletcher (1907-1914), Professor W. J. Schoene (acting, 1314-1916), and Dr. A. W. Drinkard, Jr. (1916 to date).

In 1907 the Station employed 15 whole or part-time research workers while in 1925 it employed 34. There has been a gradual increase in the number of depart-

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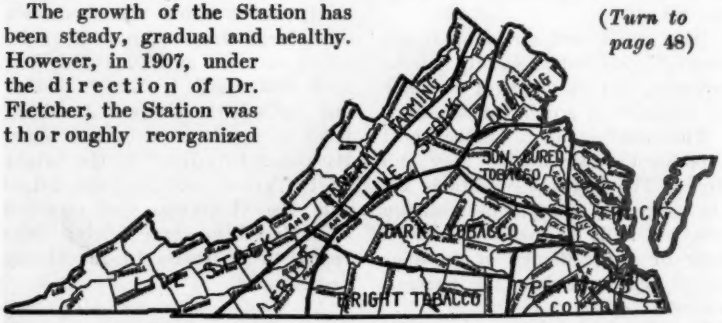
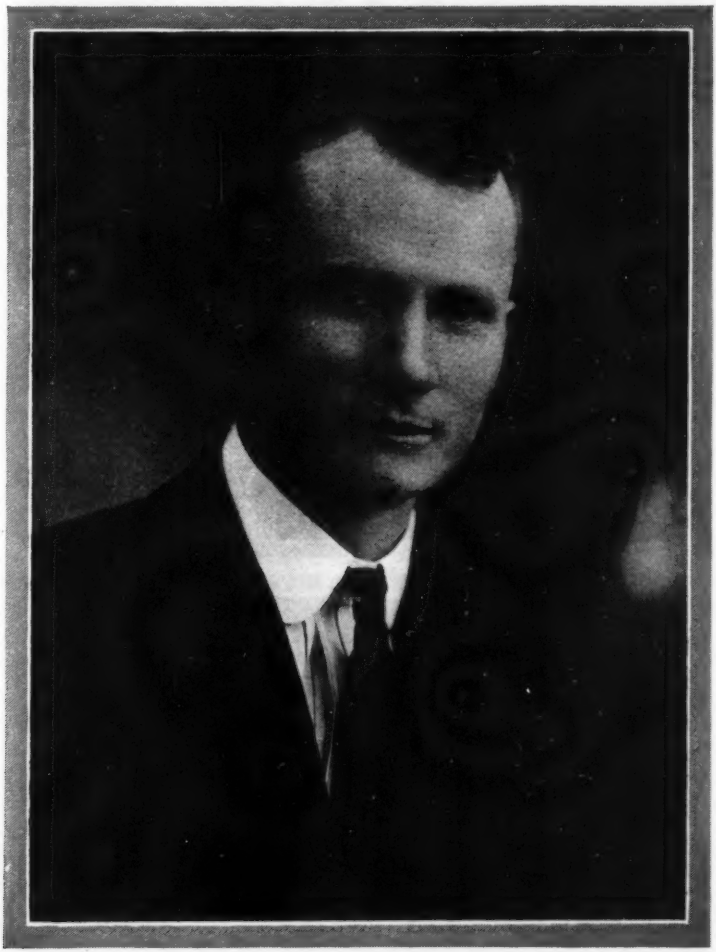


Showing the chief agricultural pursuits of the different sections of Virginia

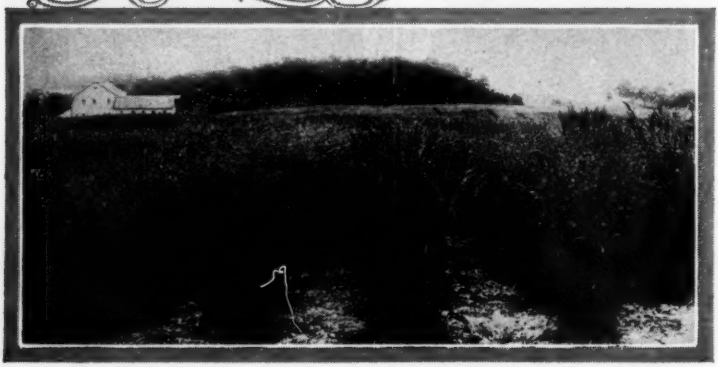
Better Crops' ART GALLERY *of the month*



Dr. A. W. Drinkard, Jr.
Director, Virginia Agricultural Experiment Station, Blacksburg, Virginia

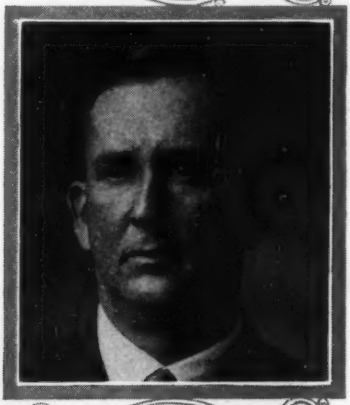
Where Virginia experiments for her farmers.

V. P. I. No. 1 oats, an improved strain of oats developed by the Virginia Agricultural Experiment Station has yielded exceptionally well on Virginia farms.



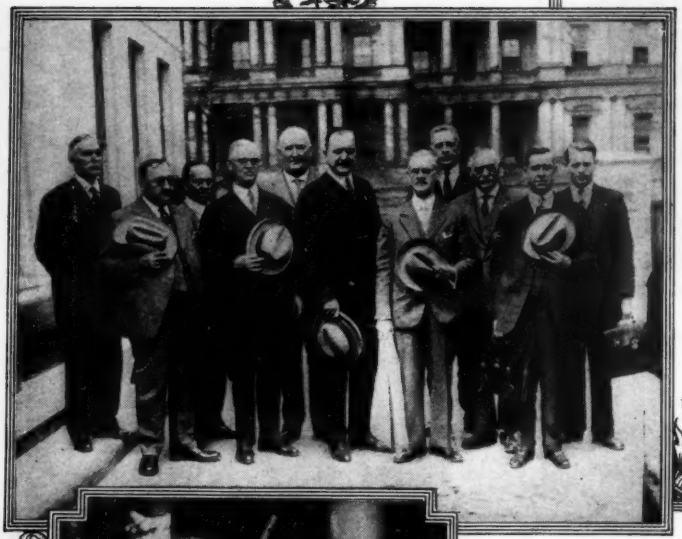
Orchard grass breeding plat where valuable new types are being isolated. This is a long-lived, deep rooted perennial bunch grass used for hay and pasture. It makes good early spring and late fall grazing.

Agricultural Hall—the main building of the Agricultural Experiment Station.

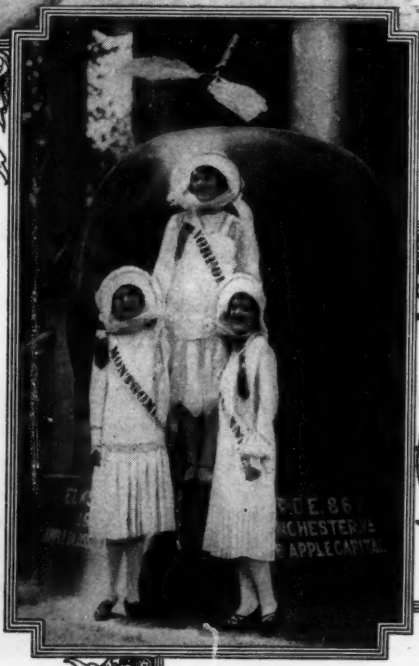


A rare combination—a trained and experienced scientist, a successful and practical farmer, and an inspiring teacher—Professor T. B. Hutcheson, Head of Virginia's Department of Agronomy.

Wheat on left following tobacco which received no fertilizer—on right following tobacco fertilized with. 400 lbs. nitrate of soda; 700 acid phosphate; 200 sulphate of potash. Wheat received no fertilizer. Both plats were limed.

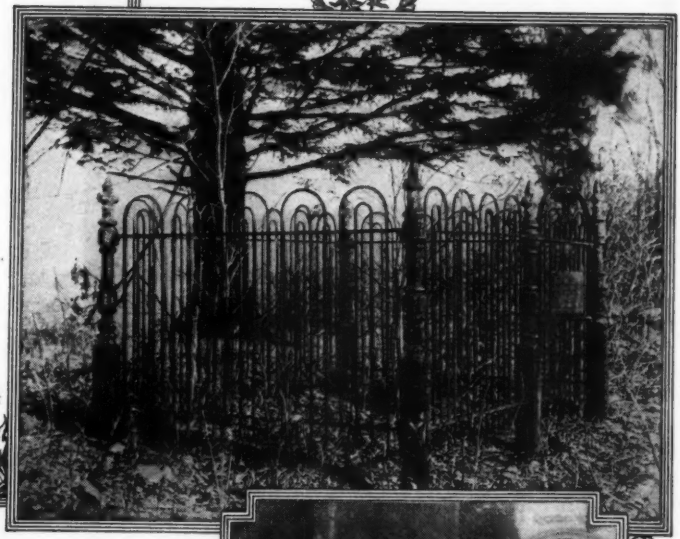


Senator Stanfield (center) with Oregon Committee which called on President Coolidge to support a California-Oregon land relief bill.



Virginia:

The big apple recently used to celebrate the Apple Blossom Festival at Winchester, Va., which has become an annual event.



A memorial is being planned for Johnny Appleseed, strange nomad who scattered apple seeds through the Middle West in early '80's.

New York:

A new use for pigs—Chorus girls from a new musical show, "The Girl Friend" are using them for pets.

P. D. Sanders, Maryland entomologist, showing an interested farmer the asparagus beetle on a big Eastern Shore asparagus farm.

Twin Percheron colts, thought to be the only pair living, were recently born at the California Agricultural School, Davis, California. As twin colts are rarely born to draft mares, the little fellows are attracting nation-wide attention of horsemen.

The Editors Talk

For who would keep an ancient form
Thro' which the spirit breathes no more?—
Tennyson.

THE agriculture of New England today compared with that of the sixteenth century may be likened to an old automobile and the same automobile when new.

NEW ENGLAND'S STANDARD FARMS

While there are many successful farms in New England today, there are thousands of abandoned and dilapidated farms. Every evidence of a generally prosperous farm life at some time in the past exists. The remains of large, well constructed houses and barns, with miles of hand-laid stone fences are what greet the eye today. It is a sad picture, but one that can be retouched and made as beautiful as in past days.

Present conditions in New England are due largely to movement of the farm people to the broad acres of the Middle West, where vast areas of easily tilled, fertile soils were in past years to be had for the asking.

With the increase in our population and development of the agricultural areas in the Middle West, has come a condition of scarcity of desirable farm land in this section and consequent high land values.

People who are agriculturally inclined must now consider the once profitable abandoned farms in the East. Thousands of such farms await the tiller of the soil and fortunately can be bought at prices that are nominal.

With the vast development of the manufacturing industries in New England has developed simultaneously one of the best markets for farm products in the country. Millions of mouths in this region must have food daily, which at present largely comes from the west and south.

The poet "Whittier" describes New England as cold, bleak and barren—her mines those of ice and snow and her soil those of rock and yellow sand. But he further says:

While on her rocks and on her sands
And wintry hills, the schoolhouse stands
And what her scanty soil denies
The harvest of the mind supplies.

But Whittier was not a modern farmer—he was a poet.

In spite of the abandonment of New England's farms, in spite of the general belief that the soils here are extremely poor, let it be understood this is not so.

The harvest of the mind—education, scientific research—far-sightedness of big industries and railroad systems, through their various agencies and experts, have demonstrated that New England soils can be made unusually productive. With proper attention to the selection of crops for the many soil and climatic conditions here; with proper fertilization of the soils; with introduction of new types of farming, conditions here can be made highly satisfactory, and farming quite as profitable as in the agricultural regions farther west.

In short, New England's abandoned farms are mines of potential agricultural wealth. What they need is brains and brawn —men and women akin to the Puritan fathers, real pioneers in American agricultural development. Truly, New England should and in a large measure can be self-supporting.

"Nothing is to be expected thence but by labor."

SO wrote John Smith, leader of a little band of colonists who settled in Virginia. He explored the bay of Chesapeake and discovered the Potomac and the Susquehanna.

SECURED BY LABOR

John Smith brought to this region 105 colonists "48 were gentlemen and only 12 were tillers of the soil". It was the first successful and permanent settlement. After five years of struggle, the fortunes of Virginia were secured.

Success was due "to the conviction of the settlers that the secret of the new world's conquest lay simply in labor".

Nothing complicated or difficult to understand—simply "in labor". But the lesson was only learned by experience, after much wasted life and effort. It displaced a delusive dream of previous settlers—a poetic fancy, a dream of easy gold.

Hence, after these bitter experiences, John Smith wrote "nothing is to be expected thence but by labor".

That was written in 1606.

How often have we since cultivated the same dream of easy gold—government assistance—magic political help!

For three centuries since John Smith wrote—the fortunes, the happiness and prosperity of our country has been secured in one way only—by labor.

So it will continue. No one knows this better than our six million farmers."

"Knowledge of production alone may make a man a slave.

Knowledge of distribution alone may make a man a plutocrat.

Knowledge of consumption alone may make a man a parasite.

Knowledge of all three makes a man an effective citizen of democracy."

GLENN FRANK,
President, University of Wisconsin

SOIL CLINICS ENROUTE

AGRICULTURE is very old—railroad transportation is very new. The routes of transportation systems were laid out for a great variety of reasons. Chiefly, to get from one important point to another by the quickest route and the straightest grade.

The problem of developing much of the agricultural land over which the railways were laid now presents itself. The development of such land works beneficially in two directions. It brings better, more frequent and cheaper service to the inhabitants along the railroad and more freight to the railroad itself. In other words, it improves the link between the farm and the markets.

As one of our important railroads has pointed out, cooperation rather than individual action is the spirit of the day. The railroad —the farmer—and the agricultural colleges are neighbors. It is in this spirit that a soil fertility train has been operated by the New York Central lines in Michigan, where we had the pleasure of meeting the workers in charge of the train who were employed, both by the Agricultural Department of the New York Central Railroad and the Michigan State College of Agriculture, particularly from the Soils Department.

The train stopped at various points along the lines of southeast Michigan. Wherever stops were made the farmers and merchants turned out in large numbers to attend the meetings and bring soil samples for examination and for testing. Everyone seemed well pleased with the service that was rendered.

The purpose of the train in the fewest words is—to assist in the conservation of our greatest natural resource, which is soil fertility. Again as the railroad officials point out, this is a "gift bequeathed to us for safe keeping by the generations of men, animals and plants which have preceded us by millions of years." As pointed out by the "head soil surgeon"—"this greatest natural resource is fast slipping away. Farms which were producing 30 bushels of wheat and 80 bushels of oats are now doing well if they produce half as much. Farming cannot be made to pay on a 50 per cent yield per acre. It is our purpose to call attention to the seriousness of this soil fertility depletion and to present the best methods of combating it by proper rotations, proper applications of limestones and adapted fertilizers and other good farm practices. The laboratory car furnishes the farmer an opportunity to have their soil samples tested and to discuss their soil problems with us first hand."

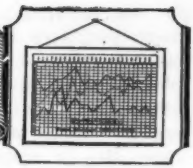
In discussing the lime and fertilizer problems of southeast Michigan, Professor O. B. Price, among many others, made the following pertinent statement: "It is estimated that approximately 35 to 50 per cent of the soils in southeast Michigan and the thumb district need lime." Lime was then discussed in detail. Professor Price also pointed out that there are very few soils in Michigan that do not respond to the application of fertilizers. The points to consider in the profitable use of fertilizers were then discussed.

The train was made up of three cars—the New York Central Agricultural Demonstration Car used as a laboratory car, a lecture car equipped with motion picture apparatus, and a business car for living quarters for the crew.

The crew was made up of Professors O. B. Price, Geo. Grantham, C. E. Millar, and Messrs. D. A. Matthews and J. A. Porter, all of the Soils Dept., Mr. Lawrence Bell of the Agr'l Engineering Dept. and E. J. Leenhouts of the New York Central Lines. Dr. M. M. McCool was on the train from time to time.

Again—the farmers—the railroads—the colleges are neighbors. This good work of the Agricultural Departments of our large transportation systems is to be highly commended. It should be continued and heartily supported.

AGRICULTURAL DEVELOPMENTS



By P. M. Farmer

The Rising Rabbit

The rabbit, well known as one of the greatest of multipliers, is now getting increasing attention from the Department of Agriculture. A survey has been made to locate rabbit breeders in all parts of the country and lists of these breeders have been compiled. Attention is being given to the study of rabbit production with a view to solving the problems of the industry and developing this source of meat and fur. One of the breeds which is receiving attention is the chinchilla, which has been receiving attention in the United States since 1918. It is essentially a utility rabbit which weighs about 6 pounds at maturity, but attempts are being made to increase the average weight to 9 or 10 pounds. The chinchilla has a particularly good pelt with soft, thick, silky fur about an inch long which resembles in color the fur of the South American chinchilla, a combination of slate, pearl gray, blue and white. In the past excessive claims have been made regarding the value of the fur and for that reason the industry has received a black eye in some regions. The pelts usually bring more than ordinary rabbit skins, say from $1.00 to $3.50 each on the raw fur market.

Earthworm Farming

Earthworms have long been said to be a benefit to the soil, although they are great pests in lawns and in golf greens. But it is not generally known that the ordinary earthworm is sometimes grown under control conditions as a source of bait for fishermen. Earthworms, says the Department of Agriculture, multiply by producing eggs laid in little capsules in the ground. The worms become full grown in four or five months. One method of growing is to sink a box not less than 18 inches deep into the soil in a shady spot. The top of the box is hinged or removable and placed two or three inches above this surface. The soil with which the box is nearly filled may be a rich dark loam kept quite moist but not too wet. The department suggests the easiest way to collect foundation stock is by the use of a flashlight or lantern on humid evenings, as at that time the worms may be found upon the surface of ground which has been devoted for some years to lawn or sod. Some raisers of *lumbricus*, which is its scientific name, feed him by spreading ordinary molasses on one side of a gunny sack which is then laid on the surface of the ground with the sticky side down. The back of the bag is sprinkled with water. Sometimes powdered bread crumbs and crumbled hard-boiled eggs are used.

Woodland Pasture Not So Good

Woodland pastures make the prettiest scenes for the livestock photographer but they do not make the most beautiful bank accounts. According to some tests made at the Experiment station at Wooster, Ohio, grass grown out

in the sunlight produces much more per acre and the grass is much sweeter. It was found that a plot 64 feet square in the open produced 676 pounds of grass during the season while plots of the same size in woodlands cut only an average of 97.4 pounds. Weeds compete with the grass more aggressively in the shady pasture. In these plots the weeds made up 76 per cent of the yield, whereas in the sunlit plots weeds made up only 40 per cent. The woodland grass contained 38 per cent less sugar-forming carbohydrates than the grass grown in the open. This grass also contained 22 per cent less total nutrients, pound for pound.

Close Cotton Bears Earlier

The boll weevil has caused a lot of changes in the methods of growing cotton. One of the most important is the practice of growing a closer stand so that the plants will produce less vegetative growth and begin fruiting earlier. In South Carolina the experts have decided that it is best to have one or two plants every eight or twelve inches to induce them to hurry along and beat the weevil. At Clemson College plants eight inches apart bore 124,000 blossoms up to August 15, while at the same time plants spaced 16 inches had borne only 108,000 blooms and those 24 inches apart had only 93,000.

Co-ops Get Bigger

Along with an increase in number of farmers' cooperatives, the local cooperative associations have been increasing in size, says the Department of Agriculture. In 1915 the average numbers of members for each local association was 122. It is now 155, a gain of 33. Ten years ago reports were received from 4,683 associations whereas the last year the Department heard from 9,245 independent locals and units of federations. They had a total membership of 1,435,516. And these figures do not include the large scale centralized associations. Some of the details are interesting. Associations marketing dairy products increased in average membership from 83 to 124. Grain marketing associations increased from 102 to 130. Livestock shipping associations grew from 140 to 230. Fruit and vegetable associations membership decreased from 124 to 118 average.

To Study Disease in Tropics

Scientists who are doing the pioneering in the work of understanding and controlling diseases of humans and animals do not limit their field of discovery to the laboratory, but go out as the explorers of old on ships, on horses, and afoot. During May and June a party of scientists sponsored by Johns Hopkins University and the Rockefeller Foundation will go into Panama and Nicaragua to study control measures against the hookworm disease. One of the parties of the expedition will include Dr. Maurice C. Hall, Chief of the Zoological Division, Bureau of Animal Industry, U. S. Department of Agriculture, famous for his discovery of carbon tetrachloride as a cure for hookworm disease and one of the greatest helminthologists.

While on this expedition Dr. Hall, in cooperation with others, will make a survey of the disease of livestock, particularly parasitic diseases, in Nicaragua. He says the Bureau of Animal Industry wants to know what diseases of domestic animals are to the south of us as the Tropics is a reservoir from which certain diseases flow northward.

Foreign and International Agriculture

The purpose of this department is to help us understand the scientific, practical, and industrial agriculture of other countries and the international developments which result. The editor believes that such knowledge is now of the greatest importance in our agricultural prosperity. Every care is taken to insure accuracy—both of facts and their interpretation.

An Afternoon on a Rittergut

By Dr. Guy A. Peterson

Madison, Wisconsin

FOR one who was unaccustomed to German agriculture under modern conditions, it was a great eye opener to spend an afternoon walking over Rittergut Nienhagen with Rittermeister A. St. Kuehne's inspector, or foreman as he would more generally be called in America.

I talked first with the head bookkeeper on the farm to get "the lay of the land." Of the 1,295 acres operated, 1,162 were under the plow, 120 in permanent pasture, while the remainder were in roads, buildings, and waste. The diversification of the crops is indicated by the acreage in each which was, 244 winter wheat, 187 sugar beets (before the war there were twice as many), 131 spring barley, 106 fall rye, 94 oats, 84 alfalfa, 81 fall barley, 75 potatoes, 63 Victoria peas, 31 green picking peas, 31 horse beans, 19 root crops for cattle and sheep, 16 onions.

This farm is just an average sized large farm, like many thousands of others in that country. In spite of the many improvements and new machines, it requires a host of workers to operate it, for besides the Rittermeister, who serves as the commanding officer of the whole organization, there are 121 men, women, and children who receive a yearly salary from the proceeds of the farm.

Directly under the Rittermeister, as the right hand man, is the inspector, or general manager. This is the man with whom I spent the afternoon. He usually rides from one part of the farm to another, directing the overseers and managers, but he does no manual work whatever. He told me that it is not customary for an inspector to help with any work as the laborers would lose their respect for him if he did.

As assistant to the inspector, is the "Verwalter" or second officer. He, too, does no manual labor, but goes out to superintend the various activities as directed by the Inspector. Under him is the "Hof Verwalter" who superintends all the work around the barns. This superintendent gives the various feeders and stockmen orders, but he does not assist with the fork or shovel, except to illustrate the proper use of these tools. Five overseers make up the remainder of the group of men who give orders. These overseers wear working men's clothes and can help with manual labor at rare occasions without injuring their reputations, but the men over them are dressed in the finest cut and fashion.

Two bookkeepers, with two boy assistants, keep account of all time and money spent on any project. When I was there they were reducing the inflation time records to the gold mark standard so they would be comparable.

In charge of the stock are two cowfeeders, one of whom is the "Schweizer," one swine herder, as the hogs are run in pastures during the summer in the same way as sheep are herded, and two shepherds. These men, of course, have their appropriate number of helpers.

One miller is kept busy grinding feed and flour, storing purchased feeds, and attending to this end of the farm work. One woodworker or "Stellmacher" repairs wooden wheels or anything wooden that needs attention. He has a very well equipped tool house to work in, for he has much of the steel and iron work, too.

Most of the real work is done by common laborers. On this farm, in addition to the 14 overseers and skilled workmen, there were 45 men, 45 women and girls, and 17 "Burschen" or boys, 14 to 15 years old. Many transient laborers from Poland or from the city are hired in the summer as well.

Accommodations for the workers are very good in comparison to those on many farms in Germany. The married families each have a little brick house and a little yard where they can keep some poultry and livestock. The unmarried girls and men have army style barracks where they sleep and have their meals. The girls sleep three or four in a room, and though they have no accessories like dressers or looking glasses, they do have electric lights, a comfortable place to stay, and a shower bath where they can get clean if they care to do so.

When the mother, son, or daughter worked they were paid a cash wage at the end of each week. The amount varied with the sex and age of the laborer, ranging from about 50 cents a day for a single man over 18 years of age, to only a few cents a day for young girls. The pay line on Saturday night when the wages are given out is a most interesting thing to see.

Germany looks upon tenancy as a thing greatly to be feared because of its consequences on the land. They point at the growing percentage of tenancy in the United States as a dangerous state of affairs. There can be no question but what a permanent class of tenants, with no ambition to become owners of a farm in later life, is an undesirable thing, but one cannot help but think that it is better to have a class of good tenants, who are looking forward and expecting to buy farms of their own, than to have this line of laborers.

The inspector dropped into the bookkeeper's office to interrupt our musings on the labor situation, with the remark that he was ready to make a tour of inspection over the farm. When he asked me whether I would rather walk or ride, I told him that we would walk, as we could see more in that way.

We first went across a willow plantation. Willow culture is an important part of the farm business in many sections of Germany. The trees are grown in damp places, the fagots being hauled home for fuel and the good branches being sold to basket and furniture makers. Willow rods are also used by bakers to push the bread into the long ovens. Some plantations are cut every year while others are allowed to grow longer, depending on what the branches are to be used for. In some sections, for example around Ham-

burg, the willow stumps are about eight feet high, and the new growth is cut off every year or two. When smaller brush growth is desired, the willow twigs are laid in low wet land in rows a few feet apart with ditches dug between the row to let the water drain out.

We left the willows to see an alfalfa field. Three boys, driving oxen, were cultivating it with heavy iron toothed drags. One would think that this would dig up the plants, for the teeth were set straight up and down, and the field was being dragged both lengthways and cross-ways. The inspector told me that a few days spent in dragging not only killed many weeds, thereby resulting in a better quality of hay, but the mulch thus formed serve as a valuable aid in retaining moisture, so the yields were very noticeably increased as well.

As we crossed this field to the next we saw about 50 women on an adjoining farm who were digging quack grass roots with forks. A single man was directing the entire squad. Unfortunately no sun was shining so I was unable to get a picture. I couldn't understand how a farmer could afford to go to so much effort to kill off quack grass, but the inspector said that after this weed gets a good start it can be eradicated in no other way. Then, too, the neighbor had no other work for his women to do just at that time but he had to keep them at work in order to have help a little later in the season for sugar beet culture and harvesting.

I was due for a surprise as we got to the wheat fields, for they were cultivating them, or rather hoeing them as they called it. Three men followed four oxen pulling the cultivator which is supplied with a sort of garden hoe attachment. Each trip takes as many rows as the drill took at seeding time. One man drives the oxen, one walks along in front of the cultivator, holding a guide pole or steering device, and a third follows the machine to set it into the ground and pull it out again as they get to the ends. It looked like a pretty slow process, but my companion said it was a great improvement over the hand hoeing method, and that the yields are enough higher to more than pay for the work.

The spring wheat was just coming through the ground but it was being worked just the same.

Partial view of the stone buildings around the square

Lighter drags were being pulled back and forth across the spring seeding. Small sized rollers, oxen pulled, followed the drags to pack the plants in again. It looked to me as though the wheat was too small to be handled in such a vigorous manner, but it evidently pays or they wouldn't do it, and it wouldn't be a universal practice among the better farmers. In case pounding rains pack the surface, the ground is often dragged two or three times after the wheat comes up.

Two eight-foot drills with three men and four horses to a drill and one overseer for the two of them were sowing oats. As far as man power operation was concerned, the machine was being run in much the same way as the hoe.

(*To be continued*)

That Price Disparity

(*From page* 18)

year 1924-1925 was the best American agriculture has had since 1919-1920. Yet even in that year the average farmers, after allowing hired man's wages for the labor of himself and his family, had left only 0.3 per cent as interest on his investment. What better proof could anyone ask that there was something wrong with prices?

Then there is the showing of production costs. You can not prove from production costs alone that agricultural prices are too low. Production costs vary on every farm, and no satisfactory averages have been compiled. Moreover, some items that are costs to one man are profits to another, as when a landowner saves rent or interest that a tenant or a man running an encumbered farm would have to pay over to someone else.

Nevertheless, when important "cost goods" are relatively higher than farm commodity prices, it is a fair guess that there is not much margin left for the farmer after paying all expenses. Cost goods include labor, farm implements. lumber, building materials, etc.—all of which are relatively higher in price than farm products. If you want more evidence that agriculture is getting the thick end of the stick, you might mention recent farm bankruptcy statistics and banking troubles in agricultural states.

What we particularly need to know, in order to judge the significance of the proposal to drop the pre-war base method of calculating farm commodity purchasing power, is whether that method really tells you what the disparity is between agricultural and industrial prices. That is the vital point. We hear a lot about price disparities nowadays. The term is generally used to indicate how much more grain or meat you have to deliver today in return for a given amount of clothing or farm equipment or building materials than would have been necessary before the war. This assumes that the pre-war position was a natural and normal "par of exchange," as the international financiers put it. But how are you going to know what exchange basis for commodities is "normal" between agriculture and industry, at a time when all values are in flux?

(*Mr. Chew will conclude his discussion next month*)

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

The proper use of lime and its effects on several crops is well illustrated with nine pages of pictures in Bulletin 430 written by A. W. Blair, entitled "More Lime Needed for New Jersey Farms." The crops illustrated include alfalfa, timothy hay, soybean hay, oats, vetch, rye, and sweet clover. The writer gives the results of experiments with various amounts of lime applied in a rotation conducted by the New Jersey Agricultural Experiment Station. The lime was applied once in five years. Legume and non-legume green manure crops were grown. Commercial fertilizers were used. The bulletin is very practical and in addition to the experimental results discusses which is the best form of lime to use and how to make calculations to use lime at the greatest profit. It is interesting to observe that samples of acid soils on which nothing would grow were studied. Acid phosphate was used without lime. The soil still remained acid but the barley grew as well as where lime was used. The writer believes that the toxic properties were due to the soluble aluminum compounds which were rendered insoluble by the acid phosphate. This confirms the work of Hartwell & Pember and others.

Based largely on cooperative experiments conducted with farmers, C. J. Chapman and A. R. Whitson have written "Fertilizers for Special Crops," a very practical and interesting bulletin discussing the use of fertilizers on potatoes, tobacco, canning peas, cabbage, onions, sugar beets and in the home garden. The bulletin is simply written and will be reviewed at greater length in the next issue.

Fertilizer data on the consumption of commercial fertilizers by areas or by plant food constituents will become more and more useful and necessary as the opportunities for statistical work develop. It is very encouraging therefore, to note that the Experiment Station of Missouri now records the use of fertilizers in each county of that state; also the tonnage used in the fall and in the spring. Missouri also reports that the larger proportion of the tonnage sold is made up of the standard brands. This information is contained in Bulletin 239 "Testing Fertilizers for Missouri Farmers, 1925."

Other bulletins are:

"A Preliminary Report on Experiments with Fertilizers for Peach Trees," University of Arkansas, College of Agriculture, Agricultural Experiment Station, Fayetteville, Arkansas. J. R. Cooper, C. B. Wiggans.

"Some Chemical Constituents of Fruit Spurs Associated with Blossom Bud Formation in the Baldwin Apple," New Hampshire Agricultural Experiment Station, Durham, New Hampshire, Technical Bulletin 29, December, 1925. H. R. Kraybill, G. F. Potter, S. W. Wentworth, P. T. Blood and J. T. Sullivan.

"Effect of Phosphorus upon the Yield and Time of Maturity of the Tomato," New Hampshire Agricultural Experiment Station, Durham, New Hampshire, Technical Bulletin 28, June, 1925. J. R. Hepler and H. R. Kraybill.

"Inspection of Commercial Fertilizers for 1925," The University of New Hampshire Agricultural Experiment Sta-

tion, Durham, New Hampshire, Bulletin 219, November, 1925. T. G. Phillips, T. O. Smith, A. W. Petre.

Soils

"A General Purpose Soil Auger and Its Use on the Farm," University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California, Circular 306, May, 1926. Stanley W. Cosby.

"Pecan Soils," University of Florida, Agricultural Experiment Station, Gainesville, Florida, Press Bulletin 380, April, 1926. G. H. Blackmon.

"Suggestions on Rotation," Timely Soil Topics, Radio Lecture No. 5, Ohio State University, Cooperating with United States Department of Agriculture, Columbus, Ohio.

"Soils of Eastland, El Paso, Lubbock, and San Saba counties," Texas Agricultural Experiment Station, College Station, Brazos county, Texas, Bulletin No. 337, January, 1926. G. S. Fraps.

Crops

The California Agricultural Extension Service has started the publication of a series of bulletins on California crops and prices. In explaining this series, B. H. Crocheron, Director of Extension, states that each bulletin will discuss the economics of a crop prominent in California agriculture. Heretofore, those who desired statistics for any particular crop had to search through long and varied lists of references. This publication will bring the material together in one publication and present it in graphic form. The first publication is on Peaches, and gives facts available for the assistance of farmers interested in growing the crop, both to those who have already planted peach orchards and to those who may wish to determine whether they should plant them. The bulletin is full of valuable data assembled by H. R. Wellman and presented in a well picturized and systematic manner.

Onions are one of the most important crops of Massachusetts, there being 3,820 acres within the boundaries of the state devoted to the growing of them in 1925. In the interest of these growers, the Massachusetts Agricultural Station has just issued progress reports of its experimental work in Bulletin No. 227 "The Connecticut Valley Onion Industry." The publication contains excellent articles on "The Present Status of the Connecticut Valley Onion Industry" by Lorian P. Jefferson; "Fertilizers for Connecticut Valley Onions" by A. B. Beaumont and O. E. Street; "Onion Blight or Downy Mildew" by A. Vincent Osmun; and "A Study of the Life History and Control of the Onion Thrips" by A. I. Bourne.

Others include:

"Revised Estimates of Crop Acreages, New York, 1862-1919," United States Department of Agriculture, Washington, D. C., Department Circular 373, April, 1926. Donald Jackson, Joseph A. Becker.

"Asparagus Plumosus" (Asparagus Fern), University of Florida, Agricultural Experiment Station, Gainesville, Florida, Press Bulletin 384, April, 1926. Harold Mowry.

"Research Service to the Massachusetts Apple Industry," Massachusetts Agricultural Experiment Station, Amherst, Mass., Bulletin No. 226, January, 1926.

"Eighty Winters in Michigan Orchards," Agricultural Experiment Station, East Lansing, Michigan. Special Bulletin No. 149, February, 1926. F. C. Bradford, H. A. Cardinell.

"Emergency Hay and Pasture Crops," Agricultural Experiment Station, East Lansing, Michigan, Special Bulletin No. 150, February, 1926. C. R. Megee.

"Effect of Nutrient Conditions on Colloidal Properties of Certain Vegetable Crops," Agricultural Experiment Station, East Lansing, Michigan, Technical Bulletin No. 74, February, 1926. John W. Crist.

"Peonies in the Garden" New Jersey Agricultural Experiment Stations New Brunswick, New Jersey Circular 184, February, 1926. Charles H. Connors.

"Pansies from Seed," New Jersey Agricultural Experiment Station, New Brunswick, New Jersey, Circular 185, February, 1926. Charles H. Connors.

"Results of Seed Tests for 1925," New Hampshire Agricultural Experiment Station, Durham, New Hampshire, Bulletin 220, December, 1925. M. Gale Eastman.

"Subterranean Clover-A New Sandy Land Grazing Crop for Southeastern Texas," Texas Agricultural Experiment Station, College Station, Brazos county, Texas, Circular No. 37, August, 1925. A. H. Leidigh, Assistant Director.

"Orchard Crowding Its Effects and Remedies," Agricultural Experiment Station, Pullman, Washington, Bulletin No. 200, March, 1926. O. M. Morris, W. A. Luce.

Economics

"An Economic Study of the Massachusetts Apple Industry," Massachu-

setts Agricultural Experiment Station, Amherst, Mass., Bulletin No. 228, March, 1926. Hubert W. Yount and Lorian P. Jefferson.

"Steps to Nebraska Farm Ownership," Bulletin 210, February, 1926. J. O. Rankin, Cooperating University of Nebraska, Agricultural Experiment Station, U. S. Department of Agriculture.

Diseases

The wheat crop is a victim of many diseases and annually losses of several million dollars are sustained. Among the outstanding diseases probably come Stinking Smut. Losses frequently run as high as 30 per cent. Such losses are preventable if the seed wheat is properly treated. For a number of years both the formaldehyde and copper sulfate treatments have been effectively used. Because of danger from injuring seed by the use of above treatment, experts have searched for a cheaper, more effective material. The Utah Agricultural Experiment Station has published in Circular 59, results of their investigation with various chemicals for smut control. Professors Richards and Bracken state that copper carbonate has given best results and is recommended for control of stinking smut in Utah. Stinking Smut being so widespread in this country, no doubt farm advisers and farmers will be interested in writing for a copy of this bulletin.

"Disease of Grapes in Florida," University of Florida, Agricultural Experiment Station, Gainesville, Florida, Bulletin 178, January, 1926. Arthur S. Rhoads.

"Pecan Scab Control," University of Florida, Agricultural Experiment Station, Gainesville, Florida, Press Bulletin 381, April, 1926. G. H. Blackmon.

"Yellow Pickle in Greenhouse Cucumbers," Massachusetts Agricultural Experiment Station, Amherst, Mass., Bulletin No. 225, December, 1925. Victor A. Tiedjens.

"Control of Cherry Fruit Fly," Michigan State College, Agricultural Experiment Station, Entomological Section, East Lansing, Michigan, Circular Bulletin, No. 86, March, 1926, R. H. Pettit.

"The Apple-Maggot," Michigan State College, Agricultural Experiment Station, Entomological Section, East Lansing, Michigan. Circular Bulletin No. 87, March, 1926. R. H. Pettit.

"Cultural Methods for Reducing Sweet Potato Losses Caused by Stem Rot," New Jersey Agricultural Experiment Stations, New Brunswick, New Jersey, Bulletin 433, April, 1926. R. F. Poole.

"Anthracnose of Dewberries and Its Control," Agricultural Experiment Station, State College Station, Raleigh, North Carolina, Bulletin No. 248, February, 1926. Frederick A. Wolf, B. O. Dodge.

"Seed-Potato Treatment," Utah Agricultural Experiment Station, Logan, Utah, Circular 60, March, 1926. B. L. Richards.

"Making Weather to Order for the Study of Grain Diseases," Agricultural Experiment Station, Cooperating with the Office of Cereal Investigations, Bureau of Plant Industry, State Department of Agriculture, Bulletin 379, January, 1926. James G. Dickson.

Insects

"The European Corn Borer," Iowa Agricultural Experiment Station, Ames, Circular No. 100, March, 1926, Carl J. Drake.

* * *

Fertilizer Injuries

(*From page 6*)

pounds of mixture containing none to three per cent of nitrogen, eight per cent of phosphoric acid, and five to seven per cent of potash per acre about one month before setting the crop, the mixture to be broadcast in the open rows and worked into the soil. When a fertilizer mixture such as that used above was increased in amounts from 500 to 3,000 pounds per acre the injury became worse as the amount was increased.

The response of the plant to growth is most difficult on account of the cold and windy conditions that exist during June, and when the growth is further retarded by toxic fertilizers, and especially heavy applications made just before planting, the plants are not only rendered more susceptible to disease infection, but the crop so severely injured in dry seasons that the production is frequently below normal.

Virginia

(*From page 28*)

ments conducting research work until at the present time there are 11; namely, agricultural chemistry, agricultural economics, agricultural engineering, agronomy, animal husbandry, animal pathology, bacteriology and plant pathology, dairy husbandry, entomology, home economics, horticulture and rural sociology.

In addition to the research work being conducted at the main station at Blacksburg, research work in agronomy is being conducted at eight other places in the State, in entomology at four locations, in plant pathology at two points, and in horticulture in several localities.

The Station received $5,000 from the State in 1907; its first appropriation from that source. However, there has been a consistently steady increase in State appropriations until at the present time $63,000 are annually received.

The Station has issued 246 popular bulletins, 29 technical bulletins, 8 circulars and numerous newspaper and magazine articles.

THE first organized research work in agronomy began in 1902. Previous to 1902 one man did all agricultural teaching and conducted the experimental work in agronomy but there were no permanent experimental grounds while in 1925 the agronomy department had 11 research workers and extensive experimental grounds. Since 1902 the activities of the agronomy department has steadily increased. In 1905 an experimental barn was erected and 66 acres of land laid out in experimental plats. From 1902 to 1908 preliminary fertilizer tests and a number of variety trials were conducted. In 1908 several long-time fertilizer experiments were started and the work of the department was reorganized and placed on a more scientific basis. In 1914 fifteen additional acres of land were added for experimental purposes. At the present time all of the 81 acres of land operated by the agronomy department at the main station is under experiments. The soil here is Hagerstown silt loam.

On account of the great variation in soil and climate in different parts of Virginia and of the great variety of crops grown, it has been necessary for the agronomy department to establish county agricultural experiment stations at various locations in the State. There are now eight county experiment stations located on important soil types and conducting fertilizer and crop tests with the important crops of the section.

The names of the county stations with the date of inauguration, soil type, and the chief crops grown are as follows: Appomattox (1904), Cecil loam, dark tobacco; Chatham (1904), Cecil sandy loam, bright tobacco; Bowling Green (1908), Norfolk sandy loam, sun-cured tobacco; Staunton (1911), Dekalb sandy loam, general farm crops; Charlotte (1912), Cecil sandy loam, dark tobacco; Martinsville (1912), Davidson loam, general farm crops; Williamsburg (1912), Norfolk sand, forage crops; and Holland (1914), Norfolk fine sandy loam, peanuts and cotton.

As far as feasible the agronomy department conducts the same tests at all the experiment stations. The location of the county stations makes it possible to determine the value of different fertilizers and varieties under the different climatic conditions and on the various kinds of soils.

The field experiments with fertilizers have shown that available phosphorus such as is applied by acid phosphate is necessary for all crops and all soils of the State. In fact in most cases phosphates and organic matter seem to be the chief limiting factors in production as shown by the experimental results. The results show that one of the best ways to add organic matter is through the use of the proper kind of rotation. It was found on Hagerstown silt loam that the cost of producing a bushel of corn without fertilizer when the rotation was corn, wheat, grass and clover two years was 69 cents and 65 cents when 400 pounds of acid phosphate was used per acre. The cost when corn was grown continuously without a cover crop or fertilizer was $1.08.

The experiments of the agronomy department in the improvement of old pastures have yielded excellent results. Phosphates and lime have paid handsomely in increasing the carrying capacity of blue-grass pastures.

The fertilizer experiments with tobacco have had a material influence in improving the quality and yields of this crop. These experiments show that all three types of tobacco, bright, dark and sun-cured, require a fertilizer analyzing 8 per cent phosphoric acid, 3 per cent ammonia, and 3 per cent potash for the ordinary tobacco soils. On the lighter tobacco soils the ammonia and potash should be increased 1 per cent. On very sandy soils the tests show that a fertilizer analyzing 8 per cent phosphoric acid, 4 per cent ammonia and 5 to 6 per cent potash is the most profitable.

The results indicate that the source of ammonia is an important factor in fertilizing tobacco. The dark and sun-cured types should receive two-thirds of their ammonia from organic sources such as dried blood and cottonseed meal and one-third from nitrate of soda or ammonium sulphate. On the other hand, bright tobacco should receive one-third of its ammonia from an organic source such as dried blood or cottonseed meal and two-thirds from an inorganic source such as nitrate of soda and ammonium sulphate in equal amounts.

The ordinary rate of application of tobacco fertilizer is 700 pounds per acre. The results secured by the agronomy department show that the amount can be profitably

V. P. I. Green Mountain potatoes developed by Virginia

increased to 1,000 or 1,400 pounds per acre. The experimental results show that increasing the application of 8-3-3 fertilizer from 700 to 1,400 pounds per acre increased the returns from bright tobacco $95.00 an acre.

Experiments show that fertilizers play an important role in cotton production. It seems from the fertilizer tests with cotton that a fertilizer analyzing 12 per cent phosphoric acid, 4 per cent ammonia, and 4 per cent potash should be used. The season in Virginia is rather short for growing cotton and for this reason care should be used to apply the right kind of fertilizer. Too much ammonia should not be used as the maturity will be delayed too much. Phosphorus is very important as it hastens maturity and produces a high quality lint.

THE experimental results show that potash plays an important part in cotton production. This plant food seems to be especially valuable in that it aids greatly in preventing rust. Rust causes premature shedding of the leaves and ill-formed, hardened bolls which do not develop normally. Rust injury can be greatly reduced by the use of potash. Comparatively large quantities of potash should be used when the soil is light.

The results of the fertilizer tests with peanuts show that when peanuts are grown in rotation with other crops, which are properly fertilized, direct applications of fertilizers to the peanut crop is unprofitable. However, where such conditions do not exist an 8-2-4 fertilizer should be applied to the peanut crop.

The experiments with lime show that liming should be done in reference to the rotation as a whole rather than in respect to any one crop. All the crops in the rotation secure benefit from the lime. The results of experiments conducted with lime by the agronomy department in various sections of Virginia show that the use of one ton per acre once in a four-year rotation gave returns valued at $10 per acre per year or $40 per acre for the rotation. The experiments also showed that ground limestone, marl and burnt lime are of equal value as measured by crop yields provided they are applied on the basis of equivalent quantities of calcium per acre.

THE chemical work in reference to fertilizers and soils is done by the department of agricultural chemistry. This department has found that when phosphatic fertilizers are applied to soils and corn grown continuously, practically all of the phosphorus that is fixed in the soil is held in the top four inches and the amount fixed is about the same from various phosphatic fertilizers such as acid phosphate, raw rock phosphate, and basic slag.

Another interesting fact discovered is that recently precipitated iron and aluminum phosphates are just as available to plants as the phosphoric acid in acid phosphate. The results of the agricultural chemistry department refute a statement commonly heard to the effect that acid phosphate makes soils acid. The results show that soil to which 3,000 pounds of acid phosphate was applied over a five-year period was no more acid than soil to which an equal quantity of phosphorus from raw rock phosphate had been applied and no more acid than the soil on the check plat.

It was found that land which had grown corn continuously for 15 years and which had decreased

markedly in productivity even when heavily fertilized and manured had its productivity greatly increased by the application of one ton of lime per acre. The results indicate tnat the cause of the decrease in productivity was the reduction in calcium in relation to magnesia and the increase was due to the increase of calcium in proportion to magnesia by the addition of the lime.

The department of agricultural chemistry has been carrying on lysimeter studies for three years with the object of studying the availability of different liming materials as shown by the amount of calcium in the drainage water. There are two batteries of lysimeters, one containing 63 and the other 30 including two rain gauges. In the former set Hagerstown silt loam is being used and in the latter Norfolk sandy loam.

In some of the lysimeters red clover is planted and the entire crop is turned under while green. It is interesting to find that the green crop has not increased the acidity of the drainage water. This finding is in keeping with field results which show that if green manures create acidity in the soil when turned under, the acidity is very transitory. When the green clover is incorporated in the soil in the lysimeters nitrate production and losses were greatly increased. This same condition existed when dried clover hay was incorporated in the soil. The experiment has not been conducted long enough to secure conclusive results in reference to loss of calcium.

The analysis of the rainfall collected in the rain gauges has yielded some noteworthy results. It was found that the recovery of sulphur in the rain water amounted to 12 to 13 pounds per acre per year, potash 8 pounds, magnesium carbonate 30 pounds, calcium carbonate 35 to 37 pounds, and nitrate nitrogen about one pound. It is interesting to find that the bulk of the nitrate nitrogen was found in the rainfall after severe electrical storms.

THE agronomy department has conducted numerous experiments to determine the value of varieties of different crops. These tests have made possible the use of the proper varieties and have aided greatly in preventing the use of poor and unadapted varieties.

The production of improved strains has been an important accomplishment of the agronomy department. Two improved strains of wheat, one bearded, V. P. I. No. 131, and one smooth, V. P. I. No. 112, have been distributed to farmers and have done exceptionally well on Virginia farms A new oat, V. P. I. No. 1, has been originated and is widely grown with unusual returns on the farms of the State. A new potato, V. P. I. Green Mountain, has been developed by selection from the ordinary Green Mountain which yields, on the average, 19.5 bushels more per acre than its parent. This new strain has wonderful cooking quality and is in great demand.

That the work of the Virginia Agricultural Experiment Station is appreciated by Virginia farmers is evidenced by the ever-growing demands which they make of it and the ever-increasing support given by the state.

* * * * * * *

Said one mouse to another as they spied something peeking from the edge of a box—"Ain't that the cat's whiskers."

Unbending Backs in Farming

(*From page 26*)

No longer does the truck grower have to wait for rain to water his field before planting. Modern transplanting machines are equipped with water tanks which sprinkle the roots of each plant before pressing the soil about them. Since the moisture is applied from below, the surface soil is given less chance to "cake." On most of the machines, a fertilizer attachment may be employed to enrich the soil, automatically, during the process of transplanting.

Both horse and tractor power are now in use with the transplanter. R. A. Rasmussen, a strawberry grower at Oshkosh, Wisconsin, prefers to use a light farm tractor because of its uniformity of speed. To make it possible for the plant "droppers" to keep up with the speed of the planter, Mr. Rasmussen has all of the strawberry plants packed one way in the boxes before the work is begun. With the soil in readiness, the plants properly arranged, and plenty of water convenient for use, this truck grower has planted as many as five acres in a single day.

Cabbage growing is another industry which has been greatly encouraged by the invention of truck field machinery. The ground is cultivated; and as soon as the plants have reached the proper stage for transplanting, they are set out into the fields in a manner similar to the transplanting of tobacco.

Down the Mississippi River on an island just out of Muscatine, Iowa, we are told that there are other truck growing industries which have developed with the aid of farm machinery inventions. There W. A. Hoopes has transferred the back-breaking tasks of planting peas, beans, Irish potatoes, and the seeds of watermelon and cateloupe to the machine with unusual success. In North Carolina, Georgia, Kentucky, and other southern states they have transferred the tasks of transplanting sweet potatoes from muscle to machine; and in Michigan, truck growers are transplanting celery by machine. Even florists have enlisted the services of machinery to transplant bulbs and foliage.

But the transplanter is not the only miracle of invention now available to the truck farmer. There are the tobacco and wheel hoes, the weeders, the harvesters, and all of the other cultivating machines that are rapidly transferring labor from the shoulders of man to the machine. Among the harvesters is the beet harvester which can pull, top, and stack four acres of beets in a single day. With W. S. Drummond's discovery of the onion mower, the task of topping onions has lost much of its burden.

And so the story goes. Inventive minds are constantly at work devising new methods of unbending the back of "The Man With the Hoe."

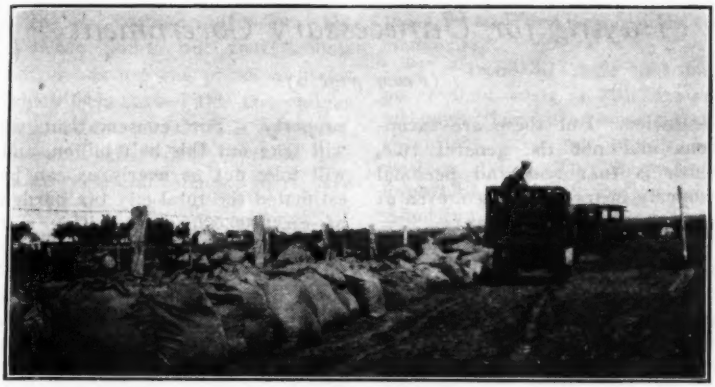
* * * * * * *

THE MANICURIST

An Irishman who was signing articles on board a ship began to write his name with his right hand, then, changing the pen to the left hand, finished it.

"So you can write with either hand, Pat?" asked the officer.

"Yis sor," replied Pat. "When I was a boy, me father (rist him!) always said to me, 'Pat, learn to cut your finger nails wid your left hand, for some day ye might lose the right.' "—*Exchange.*



Seed is sometimes transported 10 *to* 15 *miles to central curing beds*

The "Kentucky" of Missouri

(*From page* 27)

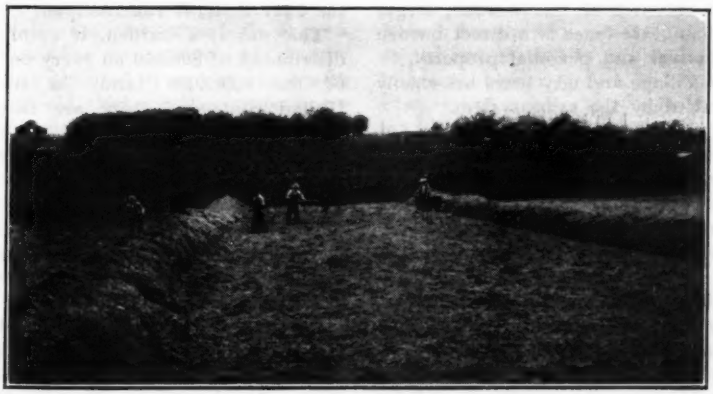
spread to dry. Frequent stirring hastens the rapidity of the curing process. Rapid curing is essential to bright, high quality seed. Slow curing results in dark, discolored seed and in many cases low germination.

In rainy seasons the curing process becomes a real problem. Once the crop is partly cured, it is ricked when rain threatens. To prevent heating the ricks are "turned" frequently.

As soon as the strippings are cured sufficiently for storage, they are sacked and stored away ready for sale to the threshing and cleaning companies. In this condition it is known as "dry rough."

Experience has shown that the practice of stripping the fields each year does not in any way injure the stand or growth of the blue grass on permanent blue grass pastures.

Northwest Missouri is famous for the quality of blue grass seed produced.



The green strippings are scattered between the ricks and turned at intervals

Paying for Unnecessary Government

(*From page* 8)

are levied. But these are exceptions and not the general rule, which is that real and personal property bears the burden, even of the overhead or state tax.

Turning then to the tables of property valuations, it is found that the predominating item is land and buildings. The next item is of the various items of property found on the farms, live stock, utensils, etc. Money, merchandise, and credits are found in the lists of many states, but the total of all these items other than land and what is required to work land, falls very far short of what it is a matter of common knowledge is the value of what we generally term "intangibles".

This is not the time or place for a discussion of various tax or valuation methods. It is only an effort to set down the facts as shown by this survey by The Grange.

At least one-half the cost of state government falls directly on land and its appurtenances.

In the realm of county taxes it is shown that this burden, larger than state taxes is a direct burden on real and personal property.

Village and city taxes are chiefly raised by the same system.

School taxes, except in the few states in which the State makes a material state contribution to local school costs, are entirely matters of direct taxation on real and personal property.

In other words, assuming that the total tax burden is $4,500,000,000 (the survey with 9 states missing totals to $3,742,000,000) it is safe to assume that all except one-half of the state taxes or something less than $500,000,000 is raised by direct taxes on real and personal property. For conservatism we will take out this half billion, and will take out as nearly as can be estimated the total city tax burden of $800,000,000 more. This will leave $3,200,000,000 raised directly on rural and urban real and personal property. Of this nearly a billion dollars is direct school taxes all on rural, or farm and small village property. Fully one-half the remainder or $1,100,000,000 is direct tax on farm and rural property the other half on city property.

OF course all of these computations are theoretical and approximation, but they are safe and conservative from the figures in the Washington office of The Grange, and they show that the farm property of the nation is paying $2,100,000,000 direct taxes each year, $1,000,000,000 for schools, and $1,100,000,000 for its contribution to state, county, town and other direct taxes, or a total which is within a half billion of as much as the 1924 Federal tax receipts.

This means a burden, if evenly distributed of $262.50 on every one of the 8,000,000 farms in the United States—if there are that many. Two hundred and fifty dollars is more than the average profit of many hundreds of thousands of farmers, according to Department of Agriculture figures. This tax, the cost of unwanted government, is the handicap that the rapidly expanding cost of government creates—the millstone around the neck of farmers in their efforts to be, as of old, the independent, self-respecting, self-supporting, sturdy, self-perpetuating bulwark of Americanism.

In a further discusion Dr. Atkeson points out that schools and roads are the principal items which have caused this tremendous total of tax costs. It is apparent, however, that outside these two most essential items, there are hundreds of millions of tax money going elsewhere. Parallel to this, he points out that the cost of armament, and pensions, and interest and debt payments, costs due to past and prospective wars, are the principal items which cause the tremendous total of federal government costs. It is equally obvious that outside of these items there are hundreds of millions of federal taxes spent for other purposes.

Concluding the discussion of these facts Dr. Atkeson adds this comment:

"The trend of state and local government costs is still upward, although there are some notable exceptions in a few middle and western states. This is the most important problem before good American citizens. So long as the public insists on a continuation of the present road policy and on increasing and extending our system of education at public expense the field of tax reduction is limited to careful economy in the administration of government, to the limitation of government functions to those which are essential, and to the elimination of those alleged functions of government designed to spend tax raised money for purely sentimental purposes."

* * *

Tattooed Hogs

(*From page* 9)

pronounced free from tuberculosis, consequently the hogs could not have become infected through following the cattle. The inspectors then turned to the poultry for the cause and found the flock badly infected. The remainder of the hogs on the farm all reacted to the avian test. On the inspector's suggestion, the entire flock of poultry was disposed of and replaced with day-old chicks in the spring. Later a number of hogs from this farm were shipped to market and again identified by the tattoo mark. A report on the slaughtered animals showed that not one was infected.

Experimental work involving the study of dressed carcasses could also benefit by the use of the tattoo marks.

A simple and efficient tattoo instrument which any farmer can easily make and learn to use readily has been invented by Dr. F. E. Murray, a veterinarian of the United States Department of Agriculture. He has diverted ordinary phonograph needles from their tuneful purpose and utilized them in making an instrument for playing a sort of a "tattoon" on the pig's skin.

The instrument consists of an 18-inch handle with a metal holder on the end, slotted to receive Babbitt-metal blocks, ¾ inch by 1 inch. Phonograph needles are imbedded in the metal blocks to a depth which leaves their points protruding about ¼ inch, arranged in the form of letters or figures. By changing the blocks any combination of letters or figures can be secured.

Ordinary black automobile paint is used for the inking fluid and is spread on the needle points with a small brush. The mark is applied to the hog merely by striking him smartly with the inked points, usually on the back.

Her Majesty, Alfalfa

(*From page* 11)

the audience both while in the procession and when on the stage.

Four little girls precede the queen and strew alfalfa blossoms and leaves in her path from baskets which they carry. Two other girls carry the train of the coronation robe, and another bears the crown on a cushion.

The county agent or whoever is in charge of the "coronation" gives a little preliminary talk about the value of alfalfa and the high esteem in which the community of farmers holds it. Then the royal procession appears heralded with march music by band or orchestra. After the crown has been placed on the head of Alfalfa, she makes a fitting inaugural address, in part somewhat like this:

"You have elevated me to the highest post of honor in the land —that of Queen of all Forage Crops. My gratitude can best be measured by the prosperity that will come to you during my reign. I shall claim many lands that are now sod-bound with inferior timothy—so inadequate in supplying the needs of dairying in the greatest dairy state in the Union. My conquests will extend in the sand country—now so exhausted under the shackles of rye, corn and potatoes. From north to south; from east to west; I shall extend my domain. All this is possible only by the loyalty and cooperation you, Wisconsin farmers, show my worthy warriors and servants whom you now see surrounding me."

After each one of the warriors have spoken of what part they will take in the successful reign of Alfalfa, the queen concludes:

"You have heard my warriors. Together we will fight high feed costs that levy such a heavy burden on farm profits. With them we will avoid the griefs that have come from the worn-out soils of the older agricultural regions in America. With them we have a constructive program that will make better and better this fair land, Wisconsin."

The alfalfa song, by audience and attendants of the queen, is sung immediately after the entrance march. The song is.

"How do you do, friends and neighbors,
How do you do?
We have brought our Alfalfa Queen to you.
If you will take her by the hand,
She'll bring wealth unto the land.
How do you do friends and neighbors,
How do you do?"

After the coronation another song by the audience and royal party makes a good conclusion.

The ceremony of "The Passing of Timothy" has also been successfully given in many places in Wisconsin. A simple sheaf of timothy is respectfully laid on the resting place of the deposed monarch while his eulogy in the spirit of "not loving Timothy less, but Alfalfa more" is spoken.

The poet Laureate of the Alfalfa Kingdom has composed in part these fitting lines on the passing of the old monarch.

"My heart burns deep with grave distress
That Timothy's fate has been progress.
Timothy, who by the settler stood
When most the land grew naught but wood,
And failed him not in his hour of need,

His passing is most tragic, indeed.

Long before enlightening science of this day,
Had blazed the trail to alfalfa hay,
With lime, inoculation and phosphate,
Timothy reigned 'o'er all this state;
Though parting now may be sweet sorrow,
We must look forward unto the morrow."

* * *

Kentucky Blue Grass

(*From page* 15)

nature has laid the foundation for a permanent agriculture—lime and abundance of phosphorus — the basis for the growth of all field crops.

In the northeastern states, however, with the cooler climate, the shorter summer months, the conditions from this standpoint are more favorable to the best development of Kentucky blue grass. The growth of blue grass in Kentucky occur not by virtue of its climate but rather in spite of it.

Throughout the northeastern states Kentucky blue grass may be found well established in limited areas, along roadsides, in well kept lawns, and in the vicinity of barnyards. At the Pennsylvania Experiment Station the division strips between the old fertilizer plots have maintained a heavy growth of Kentucky blue grass for over half a century. There is, however, no extensive pasture land in the State which supports a blue grass turf comparable with that found in the blue grass region of Kentucky.

The wide range in nutritive value of green immature pasture grasses has not been fully realized by producers of livestock. As a result, their attention has been directed to the development of existing grasses rather than to an attempt to introduce into their pastures more desirable species.

A comparison of the nutritive value of immature Kentucky blue grass with other pasture grasses shows that it excels in nutritive value all other eastern pasture grasses. In fact, it contains a higher percentage of digestible protein than either red clover or alfalfa. Data presented later show that a well fertilized blue grass pasture is capable of furnishing three times the digestible crude protein supplied by a four-year rotation of corn, oats, wheat, and grass. It will also be seen that an equal area of blue grass pasture is capable of producing more total digestible nutrients than is produced by a grain rotation on the same soil. The known labor cost of producing a grain rotation as compared to pasture maintenance

	Pounds per Acre Seven Inches			
	Blue Grass Soil, Ky.	DeKalb Soil Pa.	Volusia Soil Pa.	Westmoreland Soil Pa.
Total Phosphorus	15,000	873	1834	1384
Available Phosphorus (Soluble in N/5 HNO_3)	5,000	8	35	17
Per cent Total P Soluble in N/5 HNO_3	33.3	0.91	1.8	1.2
Acid Phos. Equiv. to Soluble P	18,868	30	131	62
Acid Phos. Equiv. to Total P	56,604	3294	6921	5223

should leave no doubt in the mind of the reader concerning the economy of pasture feeding.

Kentucky blue grass differs from other pasture grasses found in Pennsylvania in that stock relish the self-cured grass left in the field during the winter months. The following table shows the nutritive value of Kentucky blue grass, in comparison with other pasture grasses and legumes:

Computed on the Basis of Green Roughage. Pounds Digestible Nutrients in 100 Pounds of Dry Matter.

	Crude Protein	Carbo-hydrates	Fat	Total Nutrient
Kentucky Blue Grass (before heading)	15.5	43.6	3.4	66.9
Kentucky Blue Grass (headed out) ...	8.3	45.8	1.9	57.9
Kentucky Blue Grass (after bloom)..	4.3	50.2	1.6	58.2
Canada Blue Grass	3.9	51.8	1.2	58.4
Red Top	4.8	50.8	1.5	59.0
Orchard Grass	5.8	45.5	2.0	55.1
White Clover	14.2	44.0	2.2	63.3
Red Clover (in bloom)	9.0	50.1	2.5	65.8
Alfalfa (in bloom)	12.7	41.7	1.1	57.1
Average 44 Grasses	5.6	48.2	1.6	57.4
Average 25 Legumes	13.6	42.7	1.7	63.1

Computed from Henry's Feeds and Feeding, Table III., p. 738

* * *

Winning on Principles

(*From page 22*)

AS a sixth point he states very emphatically that it is necessary to do a thorough job of plowing. No matter how urgent the time or how late the season, the plows on this farm always do a good, thorough job. Following the plow, is the roller or disc or harrow. Always enough pulverizing is done to prepare an extra good seed bed.

As one would naturally expect, Zigler's next point is cultivation. He uses the ordinary implements. He uses them thoroughly and well and at the time that will do the most good. He keeps the weeds down and provides a nice loose mulch around his growing crops.

"Use good seed," he says. His potato yield was high because he had fertilized, because of good cultivation and because of the fact that he had used seed from a high yielding variety. In just the same way he secures a few extra bushels of wheat or corn by using the varieties best suited to his locality. The seeds he uses must possess germinating qualities. He takes no chance with seed corn that may not grow but tests it.

THE ninth principle which he emphasizes is marketing. In his busy life, this has been closely tied up with production. To produce quality crops of the kind that the market wants is his principle method of handling the market situation. A variety of crops helps, too, he says, for if a low price develops for one crop he is very likely to make on another.

His last point isn't exactly farming but it is important in the business of farming. It is the old

adage, "Spend less than you make." It was this that enabled him to make the small savings with which he started farming. It was this that enabled him to enlarge his herd, to improve his farm, to educate his children and to buy more land. He applies this to his fields and endeavors to place more fertility upon them than his crops remove. Once he stated to his boys, "If you sell hay or grain you are robbing our farm to build up that of a neighbor. If you buy feed you are building up our own."

THE original 38 acres grew to 140. This came from the efforts put forth on the 38. Never did he resort to the carpenter trade or any other work to provide assistance. Furthermore a real home was built upon this farm.

Eight years ago the father turned the home farm over to his sons and moved to an 80-acre farm which he purchased at that time. The fertility of this land was in a low state.

On this newly acquired farm he was able to put into practice more readily the principles that had proven so helpful on the other farm. He had capital yet did nothing elaborate. The 300-bushel yield of potatoes was grown on this farm.

He insists that one complete four-year rotation together with a heavy application of commercial fertilizer is all that he needs to restore any farm to a productive state.

A STORY of a visit to Zigler and his farm would not be complete without reference to his dependability upon the state agricultural college. It was a state extension worker who first told me of Zigler and whose enthusiastic account of his success that persuaded me to change my routing so that I could visit him. Zigler is a splendid cooperator in conducting demonstrations in soils and crops. He depends as a balance wheel and guide upon the specialists who bring him the best from the experiment station and college. He is well versed in technical information which has a bearing upon his business. His friendliness and his reliance upon the college men is not a separate principle but an integral factor in the development of the ten points that, to him, constitute a rather complete outline of successful farming.

Ready to make use of better crops

Southern Ways with Peaches

(*From page* 14)

of the fruit. The potash is absolutely necessary to produce the highly colored fruit, which is so much desired. The highly colored fruit always sells the best. Firmness is necessary where the fruit is to be shipped and, therefore, a liberal amount of potash, as well as nitrogen and phosphoric acid is always included.

Some prefer to apply the fertilizer just before blooming. Still others apply ten days or two weeks before blooming time, but this is not generally practiced. It is known, of course, that apples should have the fertilizer ten days or three weeks before blooming in order for the fertilizer to have the proper effect on the production of the fruit buds. This is not the case with the peach and, therefore, it is generally considered that the proper time to fertilize the peach trees is just about the blooming time.

One of the leading peach growers of the South, whose orchard is in a sandy section, uses a 6-4-3 for the trees that have not reached the bearing age. For bearing trees he uses an 8-5-5, with three-fifths of the nitrogen coming from organic sources, such as meat scrap, tankage, and cottonseed meal, and the other two-fifths from nitrate of soda and sulphate of ammonia. For the nitrogen used on the unbearing trees, 75 per cent of it comes from organic sources and 25 per cent from the inorganic. He also advises that he wants all of his potash to come from sulphate of potash. This same grower recommends that where the soil is fairly rich that for the bearing trees the nitrogen may be reduced one per cent and the phosphoric acid increased one per cent, thus giving a 9-4-5.

The amount of fertilizer applied varies, but it is generally agreed that one or two pounds per tree is needed the first year; two to three pounds the second year; four to six pounds the third year; six to eight pounds the fourth year; and by the time the trees are five years old 10 to 12 pounds should be used. Some apply more and others less, but where there are 100 trees to the acre and 10 pounds is applied to the tree it is seen that one is using 1,000 pounds per acre. This is liberal fertilizing, but not at all excessive. The peach, as is well known, is a quick grower and must have large amounts of immediately available plant food in order to produce the biggest, finest quality of fruit.

In order for the fertilizer to do its best work and for the peaches to produce maximum crops, the soil must be kept reasonably well filled with organic matter. That is the reason why cover crops are so important. Where the ground is not already fertile, the double cover crop system, or the growing of both summer and winter cover crops, is highly desirable. Even after growing both summer and winter cover crops, it is desirable to apply any available stable manure in between the peach trees during winter.

Considered from every angle, the peach crop is one of the important cash crops grown in several different sections of the South. It is a highly specialized business. There is some gamble in it, but it is almost invariably true that the grower, who practices the most improved methods and produces very high quality fruit, is the one that makes the most money and finds it the least trouble to sell his fruit.

Honored by Workers

(*From page* 19)

From 1917-1919 he was Federal Food Administrator for Georgia and chairman of Zone 5, consisting of the states of North Carolina, South Carolina, Georgia, Florida, and Alabama.

DR. SOULE had the degree of Sc.D. conferred on him by the University of Georgia in 1911 and the degree of LL.D. by the same institution in 1916. He was chosen a fellow of the Royal Society of Arts of London, England, in 1915. He has traveled extensively in the United States, South America, and Europe. He is ex-president of the American Association of Farmers' Institute Workers; ex-vice-president of the Association of American Agricultural Colleges and Experiment Stations; a member of the Association for the Advancement of Science; the American Genetic Association; the National Geographic Society; the American Economics Association; the Society for the Promotion of Agricultural Science. He was a member of the Jury of Awards of the Louisiana Purchase Exposition held in St. Louis. He served as a member of the Arkansas Education Survey in the spring of 1922. He was appointed official delegate from the United States to the Second American Congress of Economic Expansion and Commercial Instruction and the World Cotton Congress held in Rio de Janeiro, Brazil, in October, 1922. He is a member of the Phi Kappa Phi and Alpha Zeta fraternities. He is a Rotarian and an elder in the Presbyterian Church.

Dr. Soule is the author of a book on "Agriculture; Its Fundamental Principles," and of numerous papers, bulletins, and monographs on agricultural subjects, and has delivered many addresses and lectures before business, scientific, and educational organizations in all parts of the country. He has been intimately associated with teaching, research, and extension enterprises of great magnitude. He participated very actively in the agitation which led to the expansion of the work of the state colleges of agriculture and the mechanic arts through federal appropriations known as the 2nd Morrill Act; the Nelson Act; the Adams Act for the furtherance of research work; the Smith-Lever Act for the endowment of extension teaching through the placing of men and women agents in agriculture and home economics in every county in each state; and the Smith-Hughes Act for the promotion of instruction in vocational subjects as they pertain to agriculture, home economics, and the trades and industries. He has thus been identified with every great educational movement originating in the United States in the last quarter of a century.

The Georgia State College of Agriculture has organized and developed under his direction and now has a student body of 1,400 persons and a teaching, research, and extension staff of 300. The institution has the State of Georgia for a campus and intimately touches the lives of more than 100,000 citizens of the State through its service work. Dr. Soule has always actively participated in the formation and support of all organizations calculated to advance the public welfare and has achieved considerable distinction as a thinker and writer along economic lines.

Slaves

(*From page* 4)

rapid changes now taking place all about us.

Man is making strides. The trouble is, man cannot jump forward with both feet at once. His gait is so conceived by Nature that he must place one foot forward at a time, the one to preserve the equilibrium remaining firmly planted on known ground developed by his fathers, while the other foot explores cautiously forward.

In making advances man thus presents a preposterous and incongruous picture—a motley of past and present.

INDIVIDUALLY and as a race men are slaves to habits.

On January first, eighteen hundred and sixty-three, Lincoln, with a few strokes of his pen, freed the black man from the dominion of his white superiors.

But on January first *nineteen* hundred and sixty-three the descendants of the slaves he freed will be still in the chain gang with all other men—the chain gang of superstition, habit, bogies and precedent. Men will still look backward for their ideals, not forward.

"Habit," wrote Fielding, "hath so vast a prevalence over the human mind that there is scarce anything too strange or too strong to be asserted of it. The story of the miser who, from long accustoming to cheat others, came at last to cheat himself, and with great delight and triumph picked his own pocket of a guinea to convey to his hoard, is not impossible nor improbable."

And men in nineteen hundred and sixty-three will, unless I am wrong, still obey the dictates of habit and pick their own pockets of opportunities they do not recognize as theirs.

Slaves, unfortunately, are as unaware of their shackles, as the birds are that they swim in the air. Born to their environment, or hardened to it through constant confinement, they resent lustily any attempt to remove them to better things.

The world seems to wax fat and cheerful in the toils of bondage —and the very men who most need to be freed from the chains of some certain superstition or habit, who most need to be wafted away from ancient and ofttimes wasteful or even vicious custom are the ones who struggle most successfully against education.

Thus Lincoln, in preparing for the emancipation, found some of his strongest opposition amongst those very slaves who were the most cruelly oppressed.

The prisoner comes finally to love his cell. As Byron's gifted stylus limned it, "my very chains and I grew friends . . . and I regained my freedom with a sigh!"

BUT once ever so often appears a personage and a personage is a person who hews his own way in his own way.

Tumbling precedent, a personage frees men from one more of their hobbling habits.

It was only day before yesterday that we killed those who had the temerity to think for themselves—whenever we saw a head above the throng we hit it hard.

Those whose brains sprouted new ideas we first exhibited out of curiosity in the market place then, fearful that the profane sight might mark the unborn we hastily burned the of-

fender against uniformity at the stake.

Authority and habit tremble when confronted with a personage.

When a Voltaire, a Rousseau, a Burbank is born, conformity first seeks to kill, then finding the armor invulnerable, rushes to cover in the underbrush of protective habit.

Those strong, self-reliant ones who stamp fearlessly about the world, making the solid terrain of our realms of routine tremble and totter, are lucky if they live until the tender stalks of their ideas grow high enough up into the sun to assure the burst of their full flower.

But history will always be the collection of the biographies of personages—men who thought for themselves, trampled habits into the ground and broke over them new paths of truth down which the lesser, frightened souls may forever march to freedom.

NEITHER matter nor energy ever disappear. But both change form and position as life progresses.

So no tiniest act of man can be literally wiped out. "Every smallest stroke of virtue or vice leaves its never-so-little scar," said William James.

Out in Des Moines a friend of mine, a Class A doer of unusual things, a trampler of habit, invented a plan to inculcate into his seven-year-old the idea of forming good habits before it was too late.

The system was this: every time the young hopeful so far forgot the precepts as to knowingly or unwittingly do something bad he was to drive a nail into a post that stood at the back steps. Every good deed permitted him to pull one out.

For a while the post looked like an up-ended porcupine. But soon the youthful struggler saw the light and one day beamingly announced that again the post was free of nails—a good act had balanced every evil one.

"But," said his father, "go look at the post and you will see that *the holes are still there!*"

In Irving's play, Rip Van Winkle, endeavoring to break the liquor habit, says with every drink, "I won't count this time!" But Nature counts every time. Next time it is easier. Nature uses each act as a sort of divine cement more firmly to secure the act to its brother of the near future.

BUT there are some habits that make excellent taskmasters. The habit of rising early is just as easy to form as the habit of playing cards every evening. As we become drunkards by so many separate drinks, we can also become fully and proficiently educated in any subject by so many daily short periods of study.

Let no one worry about his future who will worry *now* about the habits he is forming.

The danger lies in the rulership that habits have the habit of establishing over us before we get the habit of considering them habits!

And some of us never recognize them, and are deeply offended if some outside observer, thinking to be helpful, points them out to us.

Be a slave only to good habits. Watch all habits, especially the little personal ones.

And do not fear to be a personage—a person who hews his own way in his own way who thinks thoughts of his own thinking and is a slave to no ritual or custom not of his own making.

FATHER'S FAIRLY SAFE

Nervous, frightened and worrying, the young man was striding up and down the hospital corridor. Somewhere behind the door his first child was being ushered into the world. Finally, the doctor appeared and told him to control himself or else go out and walk around the block.

"But I tell you, I'm scared to death," protested the new father.

"You needn't be," urged the doctor, "I've brought more than 2,000 babies into the world and I haven't lost a father yet."—From the Funny Side of Nellie Revell.

* * *

"What's the shape of the earth?" asked the teacher, calling suddenly upon Willie.

"Round."

"How do you know it's round?"

"All right," said Willie; "it's square then. I don't want to start any argument about it."—Stillson Zenith.

* * *

FISHING

One day about noon Mr. Jones called up a friend and said:

"I understand that Brown was at your house last night and not in A-1 condition."

"You heard right," admitted the friend. "He was here, and very much intoxicated."

"Terrible, terrible," ejaculated Jones. "By the way, was I there too?"—*Everybody's Magazine.*

PAST ALL HOPE

The neighbor of a man noted for his extreme thrift saw him going down the road on a week day dressed in his Sunday clothes.

"What's up, Cy?" he called out. "Why the glad rags?"

"Haven't you heard the news?"

"News! What news?"

"Triplets!"

"Oh, and you're celebratin—?"

"No, but what's the use tryin' to be economical now."

—*De Laval Monthly.*

* * *

Bootblack: "Light or dark, sir?"

Absent-minded professor: "I'm not particular, but please don't give me the neck."

* * *

First Englishman: "Charlie, did you hear that joke about the Egyptian guide who showed some tourists two skulls of Cleopatra—one as a girl and one as a woman?"

Second Englishman: "No; let's hear it."

* * *

Pansy to Sweet William: "Come in! Poppies not here."

* * *

DID SEEM SUSPICIOUS

"Your celebrated prisoner got away?"

"Yes," said the rural jailer. "When he borrowed my keys and told me somebody wanted to see me in the alley on important business, confound him, I knew he wuz up to somethin'."

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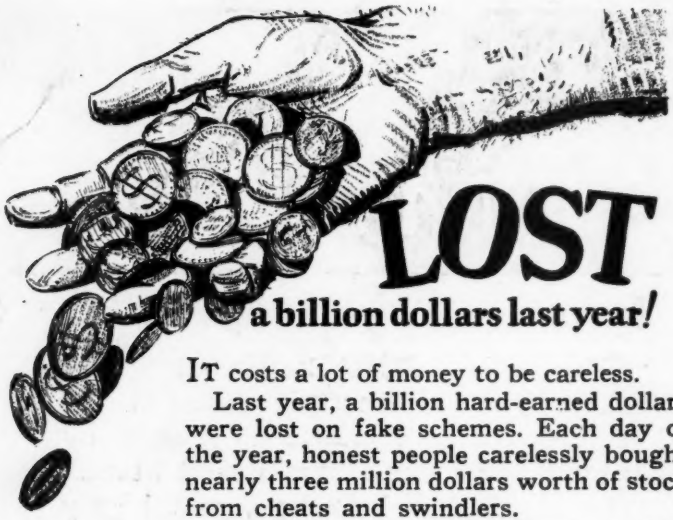

LOST
a billion dollars last year!

IT costs a lot of money to be careless.

Last year, a billion hard-earned dollars were lost on fake schemes. Each day of the year, honest people carelessly bought nearly three million dollars worth of stock from cheats and swindlers.

Carelessness doesn't pay! It pays to think first and know the facts before paying out your money.

How much of the loss from cotton rust is due to carelessness? A few years ago, rust carried away 4 to 5% of the total cotton crop and in some fields the destruction reached as high as 50%—cutting the crops in half.

Rust may develop on impoverished, or poorly drained soils. Plants grown in well drained soil—with a good supply of organic matter and potash—are not pestered with rust.

In Farmers' Bulletin 1187, the United States Department of Agriculture recommends the following: " supply vegetable matter to the soil. Drain the wet fields. Use fertilizers containing potash."

For fertilizer application it recommends: "The use of kainit at the rate of 200 lbs. per acre, or 50 lbs. per acre of muriate of potash, or the application of other potash-containing fertilizers."

On this basis, at least 600 lbs. per acre of a high analysis complete fertilizer containing 4% potash—or 400 lbs. per acre if the potash content is 6%—are required to supply the necessary potash. If the losses from rust are heavy, larger applications per acre may be used to advantage.

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